Master's thesis

Urban Studies and Planning

Animals as Stakeholders in Urban Spatial Planning: A Case Study of the Jokeri Light Rail, Helsinki, Finland

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Abstract

Urban spatial planning is a cooperative mechanism in ethics which seeks to regulate how land is used, modified and arranged in order to sustain quasi-stable coexistences of dense populations with varied needs and values. Perhaps no needs and values are more varied than those of the many nonhuman animals which live alongside humans in urban spaces. Communicative planning theory (CPT) has emerged over the last 30 years to improve planning's ethical content by navigating fuller and more diverse multi-interest, multi-stakeholder discourses. The perceived or real absence of significant human-nonhuman animal communications presents a problem for incorporating animals into communicative planning's anthroponormative frameworks. This thesis adopts a socioecologically hybridized perspective to explore why and how animals may be conceived of as stakeholders in communicative planning, what values and practices produce human-nonhuman animal relationships, and how these translate to outcomes in spatial planning.

Using theories which question the viability of the human-animal binary, especially actor network theory (ANT) and Callon's sociology of translation, I develop my own relational perspective of urban communicative and spatial planning practice that may include nonhuman animals as part of urban spatial planning's 'decision-making spaces'. I use this approach in analysis of a spatial planning problem involving three species of nonhuman animals, the Jokeri Light Rail of Helsinki, Finland. From the case study I draw conclusions about how nonhuman animals relate, communicate and negotiate within spatial planning systems in fundamentally distinct ways requiring the development of new communicative apparatus and stakeholder engagement tools. In conclusion, I discuss the ways in which the animal-as-stakeholder concept might be affirmatively used by professional planners to achieve better outcomes for multi-species communities. This means conceiving of urban development not as a battle of human progress against biodiversity conservation, but a multivariable negotiation to reach 'good enough' outcomes for a multitude of organisms. I conclude that contemporary spatial planning's ethical aims of creating quasi-stable urban coexistences demands developing deliberative processes of decision-making *with and in* a multispecies community.

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1. Introduction

1.1 Contextualization

Nonhuman animals are an often-overlooked agent of planning and spatial change in urban systems (Wolch, 1996, 2002). Urbanization in the 'west' was conceptually imagined as a process of technical progress transcending the material and cultural limitations of all that was not urban: the natural, rural, wild and nonhuman (Wolch, 1996). Despite these conceptual constructions of a rural-urban binary, cities have proven to be complex hybrid ecosystems fostering high densities of both human and nonhuman animal life (Grimm et al., 2000; Pickett et al., 2001; Alberti, 2016). They spread out over large areas, creating dynamic and patchy mosaics interwoven with agricultural, forest, wetland, riparian and many other habitats (Forman, 1995). In wealthy, 'knowledge-industry' metropolitan areas like Helsinki, Finland, it is now common in spatial planning practice to plan for ecosystem services and biodiversity as a way to ensure competitive amenities for an increasingly mobile digital-creative class (McDonald & Marcotullio, 2011; City Planning Department of Helsinki, 2013; Gómez-Baggethun et al., 2013). Planning that focuses on green infrastructure (City Planning Department of Helsinki, 2013; Helsingin kaupunkisuunnitteluvirasto, 2014), restorations to intra-urban waterways (Sarvilinna et al., 2012), and efforts to reduce use and disturbance of critical habitats (City Planning Department of Helsinki, 2013) all creates an implicit invitation for novel assemblages of nonhuman animals to make a more successful living in this urban region. 47% of Helsinki's urban area is classified as 'green', but the entire city fosters animal lives moving in and out of green, blue, built and unbuilt spaces to the degree that such distinctions fail to capture this rich urban mosaic (Emel et al., 2002; Helsingin kaupunkisuunnitteluvirasto, 2014). In this context, spatial planning cannot be thought of as merely a monospecies (human) communicative practice. The built infrastructure goals of a growing 'knowledge' city within this multispecies landscape designed for ecosystem services delivery and biodiversity conservation (City Planning Department of Helsinki, 2013) necessitates a conception of spatial planning as a multispecies stakeholder practice. Perhaps no contemporary project in the Helsinki region is more representative of this than the Jokeri light rail, a planned 25 km rail line that has become entangled in the valued landscapes of many animals, human and nonhuman alike (Toivanen, 2019).

1.2 Background literature

There are broad calls throughout the urban, ecology and sociology literature to address human-nonhuman relations in spatial planning through more socioecologically holistic urban decision-making frameworks that link scientific, political and social processes (Grimm et al., 2000; Pickett et al., 2001; Yli-Pelkonen & Niemelä, 2005; Heynen et al., 2006; Zipperer et al., 2011; Grove et al., 2016; McPhearson et al., 2016). Implementation failures of mega-regional conservation policies at the urban scale are taken as evidence of a fundamental rift between broad scientifically-based biodiversity strategy and socially, politically and economically intertwined local spatial planning governance and design systems (Hiedanpää, et al., 2012; Ban et al., 2013; Soulsbury et al., 2015; Bennett et al., 2017). Parallel to these calls, planning theorists have variously proposed decision-making methodologies like communicative planning theory (CPT) to more actively and better "identify the public interest as the outcome of an inclusive and dialogical process with only insignificant communicative distortions" (Sager, 2020, p. 90). Central to these communicative planning theories (Booher & Innes, 2002; Forester, 2012; Sager, 2018) is the concept of the 'stakeholder' as a category of procedural planning roles enabled to speak for 'the public interest' (Metzger, 2013, 2016a; Sager, 2018). Within socioecological and conservation planning literature, many have pointed to toolkits of stakeholder engagement in planning as a way to ensure cross-scale governance, goal alignment and harmonious implementation of biodiversity strategies in urban spatial planning (Elmqvist et al., 2004; Ban et al., 2013; Campbell et al., 2015; Grove et al., 2016; Bennett et al., 2017; Berry et al., 2018). A few specifically address the role of urban nonhuman animals in those stakeholder relationships (Hiedanpää, et al., 2012; Soulsbury & White, 2015; Leino et al., 2017; Nygren et al., 2017). Many calls for stakeholder engagement in spatial planning that involve urban animal conflicts make the anthroponormative assumption that only humans can be stakeholders. A further focus on macroscale structural and legal matters leaves large blind spots to individual behaviors and human-nonhuman micro-communicative relationships. Only a few authors have begun to probe the procedural and ontological implications of conceiving of nonhuman animals as stakeholders themselves (Hinchliffe et al., 2005; Tryggestad et al., 2013; Metzger, 2014a, 2016a, 2016b; Houston et al., 2018). These authors use alternative ontologies from the scholarship communities of vital materialism(s), ecofeminism(s) and urban animal geography (Callon, 1984; Haraway, 1991; Emel et al., 2002; Wolch, 2002; Despret, 2004, 2008; Latour, 2004; Braidotti, 2006; Butler, 2012; Buller, 2014) to reconceive human-nonhuman spatial planning relationships. In this thesis, I endeavor to continue this ontological work, forming my own conceptual perspective and testing its narrative capacities through case study research.

1.3 Research questions

My investigations into nonhuman animals as stakeholders in urban spatial planning will combine the ontology of human-nonhuman communicative relationships with the procedural issues of stakeholder communications in a real-world case study, Helsinki's Jokeri light rail. The merging of ontological and procedural leads to comparisons and insights about animals-as-stakeholders as a conceptual approach to multispecies planning problems. To achieve this goal, I will ask four research questions. The questions and the way they relate to each other in the text are described by the narrative flow chart (Fig. 1).

i) 'Why should spatial planning processes be conceived with nonhuman animals as stakeholders?' Through this question I explore the values of nonhuman animals in cities, and the relevance of this research for the goal of creating urban places that are more ethical, livable and sustainable. I will make a connection between how nonhuman animals are valued individually, the ethical constructs that have been made to enforce these values and the broader project of socioecological hybridity in planning.

ii) 'Who is a stakeholder?' is answered to define the 'stakeholder' itself, not in a lexical sense, but in the way that it is understood as a role within spatial planning processes. To do so I will perform a literature review of stakeholder theories from conventional practice, and ontological positions that challenge static, hierarchical and positivist notions of the stakeholder in planning theory. I will use the findings of this literature review to construct my own definition of a stakeholder which can appropriately transgress a human - nonhuman boundary. This definition provides me the building blocks with which I will approach my case study research.

The case study research on the Jokeri light rail project in Helsinki, Finland will be used as a procedural example to probe the question of **iii) 'how and when do nonhuman animals *become* stakeholders in spatial planning?'** This is both a question of 'how', by what means, methods and apparatus nonhuman animal stakeholdership is achieved, and 'when' stakeholdership occurs relative to the spatial planning process. The goal of the case study research is not to suggest an alternative outcome. Instead I will use it as an example of the way that a complex and inherited spatial planning system currently exists to enable some forms of nonhuman animal stakeholdership.

I will make comparisons between the case study and the preceding theoretical literature in order to form a fuller analysis that addresses the who, why, when and how of animal stakeholdership. The

insights of this analysis will be used to extrapolate broader hypotheses that set a future research agenda for answering the question: **iv) 'how can nonhuman animals become stakeholders more effectively?'**

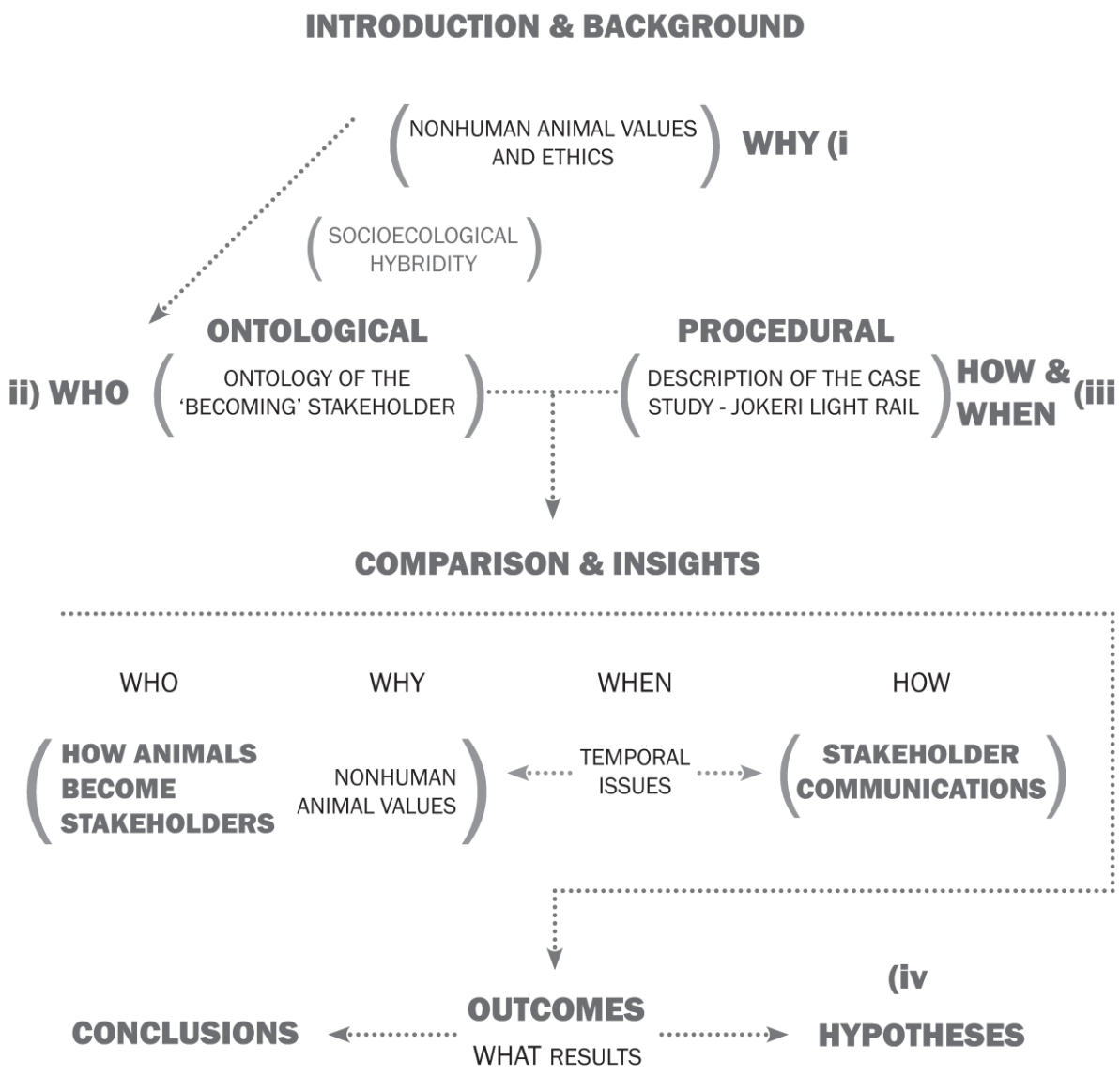


Figure 1. Narrative flow chart

2. Research question i) 'Why should spatial planning processes be conceived with nonhuman animals as stakeholders?'

To address the question of "why should spatial planning processes be conceived with nonhuman animals as stakeholders?" first requires establishing the various ways in which the *value* of nonhuman animals in cities is justified and framed. 'Value' is a term which lacks a straightforward definition, used flexibly to suit different disciplines (Hirose & Olson, 2015). In normative value theory, value describes the relative 'goodness' in the attributes of an entity (Zimmerman, 2015). This approach has been criticized for lacking a standard reference point for what is 'good' (Hirose & Olson, 2015). Since value requires that the valuer make a judgement of what is 'good', it is argued that it cannot exist intrinsically but is bound to the relationship between the valuer and the valued (Hirose & Olson, 2015; Chan et al., 2016). Chan et al. (2016) use the term 'relational value' to argue that the basic unit of nonhuman values is not intrinsic to an individual organism, but relationships between them. I have adopted Chan et al.'s (2016) concept of *relational value* in order to define the value of nonhuman animals in cities.

2.1 Nonhuman animal values

Figure 2 maps ten different *relational values* identified in human-nonhuman relationships. The first eight of the values described are adapted from interviews collected by Berry et al. (2018) of multi-sector European biodiversity conservation stakeholders. Values nine and ten on this list are synthesized from my reading of Chan et al. (2006, 2016), Clowney (2013) and Leopold's (1949/1987) work in human-nonhuman value relationships. In figure 2, these ten values are mapped as overlapping areas which occupy a field of four drivers: 1) the biogeophysical (or "planetary" drivers, relating to geological, chemical and physical flows and processes of the biosphere), 2) sociocultural (or "people" drivers, relating to communications, information and society), 3) economic (or "profit" drivers, relating to the distribution and use of resources among collectives) and 4) emotional (or "personal" drivers, relating to feelings, spirituality, impulses and desires). The first three of these value drivers are derived from the widely used "triple bottom line" (planet, people, profit) framework as applied to conservation planning (Halpern et al., 2013), while the last (emotional) responds to calls for a "fourth bottom line" that can capture personal, spiritual and less 'outcome-oriented' values (Inayatullah, 2004; Clowney, 2013; Chan et al., 2016; Cooper et al., 2016). In complex socioecological assemblages, very few organisms form relationships based on a single value driver alone (Gavin et al., 2016). Thus, mapping relational values as a field adequately represents these sometimes overlapping and interrelated categories.

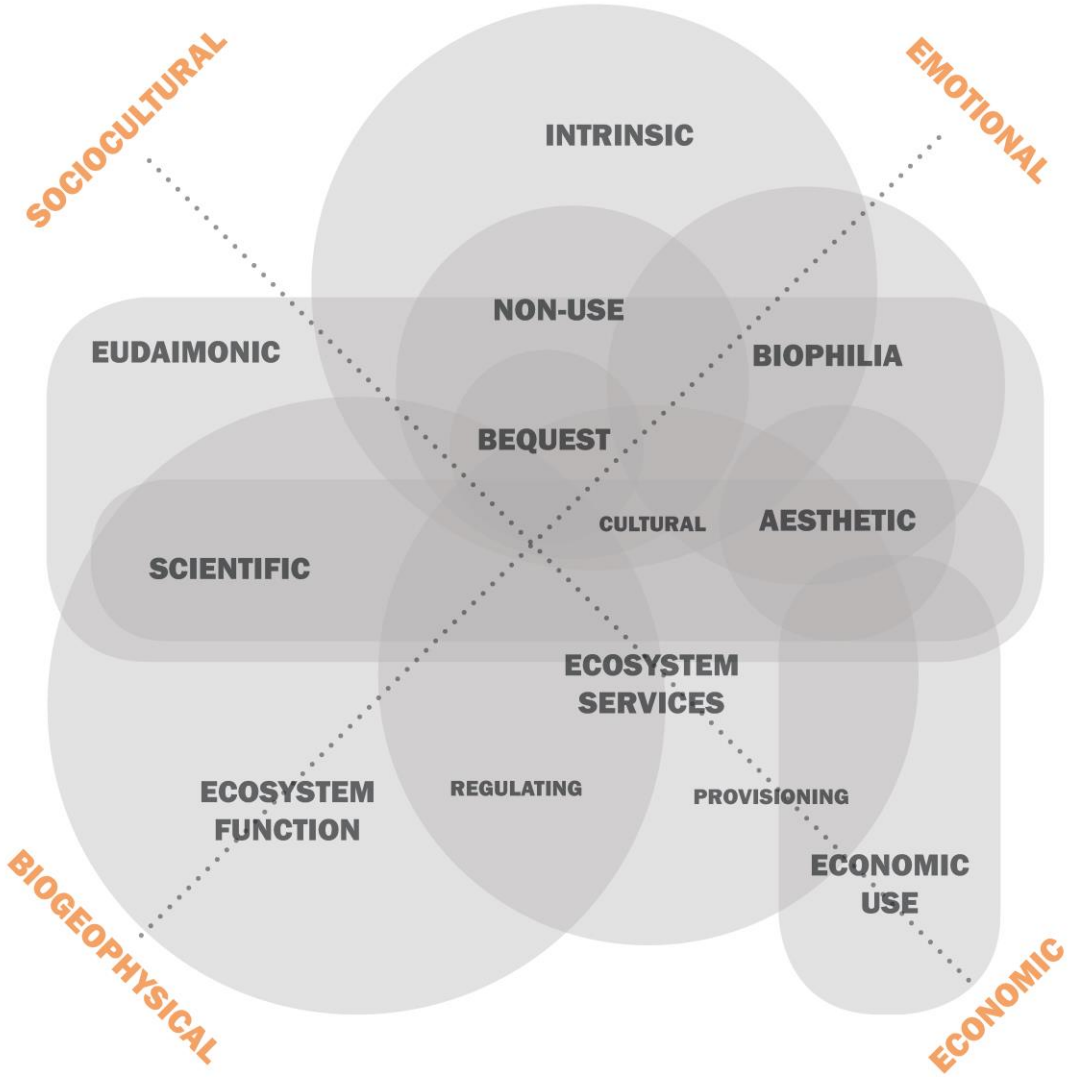


Figure 2. Values found in human-nonhuman relationships

1. *Ecosystem function* values come from a relationship in which one organism functions to benefit another, or the system of which another organism is part (Braat & de Groot, 2012). Ecosystem function value does not necessarily require human presence as any two organisms or network of organisms can form an ecosystem function relationship (Ibid.).
2. *Ecosystem services* identifies a specific human beneficiary of ecosystem functions (Chan et al., 2006; Braat & de Groot, 2012; Gómez-Baggethun et al., 2013). There are three main subcategories of ecosystem services: 1) cultural: services of organisms benefiting human

social, emotional and psychological wellbeing 2) regulating: services of organisms which maintain climatic, hydraulic, soil and other abiotic subsystems and 3) provisioning: services of the organisms which are necessary to derive material resources (Braat & de Groot, 2012; Chan et al., 2016). Some animal species can be clearly related to value-generating: for example, honeybees regulating pollination functions and provisioning honey products (Gómez-Baggethun et al., 2013; Schwarz et al., 2017). More often, the value of any one animal is hard to isolate from their web of connections within an ecosystem assemblage (Schwarz et al., 2017). It should be further noted that nonhuman animals can also generate disservices, such as causing bioerosion, spreading diseases and predating other valued organisms (Ibid.).

3. *Economic use* values take the ecosystem service relationship one level further in specificity, identifying a specifically monetary benefit extracted from the use of the organism itself as a material commodity in human economic systems (Braat & de Groot, 2012). Some economic use values are related to provisioning values. An apple tree provides a provisioning service in producing apples, but the apples themselves have an economic use value (Ibid.).
4. *Non-use value* is value captured by the willingness to purchase something that the purchaser has no intention of using (Pearce & Moran, 1994). These values may derive from a sense of responsibility, duty or care toward a social collective and are thus formed from the relationship of the purchaser toward this collective (Chan et al., 2016). For example, a philanthropist may purchase and conserve distant rainforest, not for personal use, but from the perception that this action will be viewed by others as a common ‘good’ (Pearce & Moran, 1994).
5. *Bequest value* is a closely related concept in which the purchaser does not necessarily use the ecological elements that they value but see them as a legacy to be used and enjoyed by descendants or charitable beneficiaries (Pearce & Moran, 1994; Berry et al., 2018). Notions of preserving biodiversity so that future generations may see and enjoy certain species is a widespread bequest value (Pearce & Moran, 1994; Berry et al., 2018).
6. *Biophilia* is a relational affinity between human and nonhuman lifeforms that can be explained psychologically and physiologically as a part of an innate need to be stimulated by that which is ‘wild’, living, dynamic and beyond technological control (Wilson, 1993; Clowney, 2013). It was coined by Wilson (1993) to capture, in a word, the emotional, spiritual and sensory values humans have for the nonhuman that often don’t have a tangible outcome.
7. *Aesthetic value* is a value relationship produced between an organism and a viewer who finds that organism aesthetically desirable (Kellert, 1993). Kellert (1993) identifies aesthetics as a form of sensory stimulation that produces biophilia. Aesthetic value also overlaps with the cultural services of the ecosystem services concept by inspiring art, recreation and sociocultural meanings (Schwarz et al., 2017).

8. *Intrinsic value* is excluded from Chan et al.'s (2016) relational value concept because it is seen to exist within (intrinsic) to an organism regardless of relationships to other organisms (Bratt & de Groot, 2012; Marris, 2013). Yet, as Clowney (2013) suggests, humans are inclined to value animals 'intrinsically' because from this value they acquire "moral excellence" in the eyes of other humans (p. 1002). Thus, it is ultimately derived from human-to-human relationships. It is related to non-use value and bequest value by giving them their potency to define what is morally 'good' behavior in social collectives (Bennet et al., 2013; Clowney, 2013; Vierikko & Niemelä, 2015).
9. *Eudaimonic values* are the values in acting or striving toward self-fulfillment and the achievement of the 'good life' (Clowney, 2013; Chan et al., 2016). Eudaimonic values may better explain relationships between humans and nonhumans where direct benefits for the human cannot be found, but unlike biophilia, they are not purely passive. They are bound up in active practices of care and stewardship for others (Bennet et al., 2013; Clowney, 2013; Chan et al., 2016).
10. *Scientific values*: Life scientists form a very specific kind of relationship with nonhuman animals that overlaps with many other values. Scientists are generally motivated to produce research and writing by the many relational values they hold for their subjects of study (Haraway, 1991; Despret, 2004). Clowney (2013) argues that scientific relationships to animals are partially motivated by a biophilia-driven curiosity in nonhuman life. Cardoso (2012) has drawn a tentative positive correlation between European invertebrate research output and perceptions of aesthetic value. Science motivates conservation, or non-use values, out of concern that animal genetic diversity may be lost before life scientists can adequately assess their economic and functional values (Pearce & Moran, 1994). In many contexts, scientists are required to prove the value of their research in economic terms (Leopold, 1949/1987; Pearce & Moran, 1994). That economic value, such as the potential for biodiversity to be a source of future pharmaceutical compounds, is overstated and "at best speculative" but still guides much societal decision-making on research activities (Pearce & Moran, 1994, p.65). The value may more accurately attributed to actors leveraging their scientific findings in a well-intentioned "subterfuge" to prevent biodiversity loss (Leopold, 1949, p.196).

2.2 Nonhuman animal value acuity in urban contexts

Some human-nonhuman value relationships have become especially relevant in urban contexts. The density of humans occupying urban landscapes means that there are many more potential relationships between humans and nonhuman animals (Colding, 2011; Soulsbury & White, 2015).

When accompanied by rapid and extensive abiotic disturbances, certain values become even more highly demanded in the urban context, potentially justifying a few uniquely 'urban' concepts for human-nonhuman value relationships (Alfsen et al., 2011; Soulsbury & White, 2015).

2.2.1 Urban ecosystem services and rarity biases

Urban density is often accompanied by heightened intensity and frequency of disturbances which result in typical urban environmental ailments like stormwater flooding, pest invasions and the urban heat island effect (Forman, 1995; Alfsen et al., 2011; Colding, 2011; Illgen, 2011; Parlow, 2011; Soulsbury & White, 2015). This produces a high demand for regulating ecosystem services to mitigate the severity of these effects (Gómez-Baggethun et al., 2013). Urban human density also increases the density of individuals demanding cultural ecosystem services like recreation, wildlife viewing, and education (Ibid.). This increase in demand, coupled with a constricted supply increases the relational value of many ecosystem services and nonhuman organisms in urban contexts (Ibid.). This relates to the rarity bias, often used to describe the increased value placed on animals which are rare (Clucas & Marzluff, 2011). In cities, rarity biases can become more pronounced due to the intensity and frequency of ecological disturbances which exacerbate the rarity of native species and substitute them with more common urbanophilic species (Clucas & Marzluff, 2011; Soulsbury & White, 2015).

2.2.2 Urban animal stewardship cultures

Wildlife stewardship is the enactment of sociocultural and emotional values as they relate to vulnerable 'wild' nonhuman animals (Cronan, 1996; Fisher et al., 2012; Bennet et al., 2013). Wildlife stewardship can often be guided by an explicit intention to steward a taxonomic group (Cronan, 1996; Caro, 2010; Marris, 2013). Wildlife stewardship can take on formal, informal and hybridized organizational structures which overlap in other goals for place-based environmental and cultural well-being (Fisher et al., 2012). Stewardship cultures emerge through a dynamic interrelation of values where it becomes impossible to separate the values found in the stewarded entity (such as the aesthetic value of a threatened organism) from the eudaimonic values formed from the acts of stewarding itself, such as social inclusion, cultural identity formation and one's own place-based emotional investments (Chan et al., 2016; Bennett et al., 2017). The heightened density of social networks that occurs in cities increases the relevance of stewardship as a social activity and care practices generating eudaimonic values in urban contexts (Fisher et al., 2012).

2.2.3 Public role of animals and umbrella conservation

Conservation stakeholders have long understood that focusing public attention on a single 'charismatic' or 'flagship' species makes conservation activities easier to sell and explain to lay people and political-economic power holders (Caro, 2010; Marris, 2013). It means forgoing the true nuances and complexities of ecological systems in public discourses and focusing on one species as an indicator of conservation's success (Caro, 2010). Like an umbrella, the impacts of conserving this one species are expected to incidentally protect many others in the system (Ibid.). Provoking strong emotional attachments to a single charismatic animal living on a site may be a "short cut" to enact conservation goals where resources are otherwise limited (Ibid.). In an umbrella conservation framework, the value of the human-nonhuman relationship is entangled with the values of the nonhuman's relationships to other members of the ecological assemblage as well as their capacity for a conceptual spokesperson role on behalf of that assemblage (Ibid.).

Aesthetically pleasing, prominent, unique and endemic animals also have the potential to become iconic, assuming both roles as umbrella conservation species and symbols of the sociocultural processes of place-making (Wolch, 2002; Buller, 2014). Hurme et al. (2008) and Jokinen (2019) have noted this effect in conservation action surrounding Finnish Siberian flying squirrels (*Pteromys volans*). In Espoo, the city neighboring Helsinki, Siberian flying squirrels are featured in city iconography and are the "official town animal" (City of Espoo, n.d.a). In the dense social networks of cities, affinities like these grow quickly leading to place-based attachments to 'iconic' nonhuman members of the urban community (Wolch, 2002). The animal becomes representative of what it means to live in a specific ecological and geographical 'place' (Emel et al., 2002; Wolch, 2002; Buller, 2014; Metzger, 2014a).

2.2.4 Relational values and cities

I have summarized a range of potential values to be found in human-nonhuman relationships. Because of the density of social networks and high levels of disturbance to urban systems, these values become especially acute in urban contexts. By demonstrating that animal valuing is a process bound up in relationships between humans and nonhumans, I have made untenable the perception that animal conservation can be a solely rural pursuit. Urban nonhuman animal values are part of what makes life in a city *valuable*. Acknowledging that nonhuman animals are valued in many overlapping and relational ways, and these values often achieve high acuity in urban environments, I contend that they should be a fundamental feature of efforts to make cities more

livable, ethical, and sustainable.

Relational value is specific to every relationship and has no single standardized reference point (Chan et al., 2016). It is very different from exchange value, which is the value of an entity in terms of currency (Braat & de Groot, 2012). Many systems of urban decision-making focus on measures of exchange values to make 'objective' judgments about the relative 'goodness or badness' of planning outcomes (Vierikko & Niemelä, 2015). Economic and technical optimization of urban systems continues to neglect the sociocultural, biogeophysical and emotional aspects of human-nonhuman relational values, focusing largely on economic values (Meissner, 2014; Vierikko & Niemelä, 2015; Alberti, 2016; Chan et al., 2016). Proposals to defend nonhuman animal relational values by converting them into terms of economic instrumentality have been widely criticized as 'subterfuges', and 'shallow sustainability' that does little more than support business as usual (Leopold, 1949/1987; Braat & de Groot, 2012; Bresnihan, 2016; Chan et al., 2016; Schwarz et al., 2017). This leaves large gaps in which many sociocultural, emotional and biogeophysical relational values are not defended or represented procedurally or substantively in planning. To see how and why this cleavage exist requires an understanding of ethics, a concept of not just what values are, but how social collectives make decisions related to their defined values (Leopold, 1949/1987).

2.3 Socioecological ethics

Leopold's essay "The Land Ethic", in A Sand County Almanac (1949/1987, pp. 190-203) establishes "Ethics" as a way to socially enforce values of the nonhuman in the face of inherent scientific uncertainty about how webs of ecological relations are constituted. He called attention to the intertwined moral and practical failures of a system of valuing natural resources that focused on economic instrumentalism alone, stating: "one basic weakness in a conservation system based wholly on economic motives is that most members of the land community have no economic value" (p. 198). This system of economic instrumentalism was further undermined by the uncertainty to which science could reliably convert ecosystem functionality into terms of economic value (Wilson, 1993). In Leopold's (1949/1987) time, land management agencies were working to prevent soil loss, water contamination and overuse of natural resources by educating and offering resources to private landowners. Their approach was to sell the idea of conservation as ultimately in the long-term interests of the landowners, through a mixture of ecological truth and "subterfuges" (p. 196). However, few of the landowners did anything but that which "yielded an immediate and visible economic gain" (p. 194). This constituted a practical failure in ongoing ecological degradation and a moral failure, in that the intrinsic value of human-nonhuman relationships were not being honored

by this system. For Leopold, the problem was not the absence of proper ecological knowledge, for this is a perpetually unfinished pursuit; it was the absence of *love, respect, or interest* in that which could not be understood in economic terms. This kind of problem demanded the collective social construction of a "land ethic." Leopold's "Land Ethic" hybridizes ecological and socioemotional value systems. He describes "an ethic, ecologically [as] a limitation on freedom of action in the struggle for existence [and] philosophically [as] a differentiation of social from anti-social conduct. These are two definitions of one thing. The thing has its origin in the tendency of interdependent individuals or groups to evolve modes of co-operation. The ecologist calls these symbioses. Politics and economics are advanced symbioses in which the original free-for-all competition has been replaced, in part, by co-operative mechanisms with an ethical content." (p. 190).

For Leopold, ethics, far from being a tender nicety that softens relationships in worlds otherwise dominated by the logics of techno-economic instrumentalism, is a very critical glue holding those worlds together. Ethics is a 'symbiosis' whereby respecting the *relational value* in our connections to others, we ensure our world doesn't decay into a self-destructive 'free-for-all.' It can be understood as an evolutionary, social and political response to the inherent interdependence of living beings and their values. By developing these ethics, organisms and societies can prevent their short-term resource demands from diminishing the collective values of their socioecological community and thus their long-term evolutionary continuity. He hypothesized that organisms and organizations which do not form ethics ultimately cease to thrive and continue-on in Earth's evolutionary story.

Half-a-century later, Haraway's (1991, 1996, 2003, 2016) calls to "make kin" can be read as the construction of a similar ethic for nonhuman-human relationships, this time reflecting upon failures of contemporary society to implement an ambiguous 'sustainability' rhetoric severely lacking in sociocultural and emotional content. Like Leopold, she sees "symbiosis" as the operative phenomenon of making successful life on earth, stating, "The more one looks, the more the name of the game of living and dying on earth is a convoluted multispecies affair that goes by the name of symbiosis, the yoking together of companion species, at the table together" (Haraway, 2016, p. 124). 'Making kin' places human, social, cultural and economic processes inside this "convoluted multispecies affair". It suggests, much like Leopold, that the only way to cognitively and conceptually include the nonhuman in these formerly divided human processes is to see them as "kin", entities that we can relate to in concretely affectionate, emotional and mutually affective ways. The 'making' in 'making kin' suggests that humans must act affirmatively to establish these kinds of relationships with nonhumans, as they will no longer spontaneously emerge in a world significantly inhibited by a status quo human-nonhuman binary (Braidotti, 2006).

2.4 Socioecological hybridity

Proposing the development of ethical mechanisms which defend the values of human-nonhuman relationships is an effort to overcome strong binary ontologies that separate the 'natural' from human systems of decision-making, such as politics, economics and sociology. I see Leopold's Land Ethic and Haraway's Making Kin as relational and socioecologically hybridized, seeking to avoid making an arbitrary distinction between ecological and social processes. While they are both life scientists by training, they have identified that the key to achieving consequential actions in multi-species problems cannot rest entirely on scientific knowledge production and technical expertise (Finch, 1987; Braidotti, 2006; Buller, 2014). Multispecies decision-making requires creating concrete social and communicative ties to nonhumans that ensure that the discourses of politics include them in some way (Braidotti, 2006). They recognize that decision-making which inherently divides the human and nonhuman will never suffice to create socioecologically sustainable multispecies communities (Castree, 2003; Bresnihan, 2016). My proposed use of the stakeholder concept in relation to nonhuman animals is an effort "not to change registers when we move from the technical to the social aspects of the problem studied" (Callon, 1984, p. 200). It is a tool in the socioecological hybridization of planning as a practice and the narratives that are told about it. I see in the animal-as-stakeholder concept the potential to affirmatively act against and avoid three oversimplified and divisive conceptions of human-nonhuman relations in decision-making:

Nonhuman animals as undifferentiated, univocal and external 'nature'
There is a broader socio-cultural imagination of nonhuman animals as objects indiscriminately lumped into catch-all terms like 'nature', 'the environment', or 'wilderness' (in popular understandings) (Cronan, 1996). In this concept, 'nature' remains an external monolith set as the foil against the human (Latour, 2004; Buller, 2014). Because nature is an idea, not an actor or agent, it cannot be assigned needs and interests (Clowney, 2013). Thus, to do something on behalf of, or for the good of 'nature', is impossible, yet a frequent rhetorical device in decision-making (Latour, 2004; Clowney, 2013). The rhetorical claim to be acting on behalf of 'nature' has enough political ambiguity to be merely seized by existing powerholders for their own justifications without having to demonstrate consequential outcomes for the actual individual organisms that constitute that 'nature' (Latour, 2004; Essen & Allen, 2017). As Hinchliffe et al. (2005) contend, "Nature as distant land, or as an outside to human affairs, has been called up, and called upon, as a stop to all manner of debate and struggle, often with disastrous effects" (p. 643). The conglomeration of the nonhuman into the entity of nature, makes it untenable to conceive of negotiations or subjectivity occurring within this entity, as it is imagined as an all-encompassing,

superseding truth that is ‘above the mess’ of socio-political subjectivity (Latour, 2004; Haraway, 2016). No decision of the planning system will have an entirely negative or entirely positive effect on a singular entity called ‘nature’ but instead creates variable impacts upon different biota (Adams & Lindsey, 2011). By individuating nonhuman animals as stakeholders as much as planning is capable of individuating humans as stakeholders, I aim to suggest forms of coexistence that overcome the basis of seeing human-animal relationships as a zero-sum battle between ‘nature’ (or the humans that speak on its behalf) and human economic and developmental forces, and rather as a complex and value-laden set of potentially positive, negative and neutral interactions between individual stakeholders (Hobson-West, 2007; Essen & Allen, 2017).

Nonhuman animals as scientific objects

Nonhuman animals are not absent from current conventional spatial planning practices in Europe and North America. Stakeholder communications, such as environmental impact assessments and other literature produced by members of the life sciences professions, could be claimed to act in a proxy role for nonhuman animal interests (Starik, 1995). Indeed, they help raise awareness among human stakeholders about how their decisions impact nonhuman life (Ibid.). However, popular understanding of science as a stable, uncontestable, and *a-priori* objective truth fall victim to the same oversimplifications as the ‘nature’ concept (Latour, 2004). Through the concept of animals as scientific objects, animals remain outside social and political networks and are conceived as something that can be objectively managed and engineered to fit into more dominant economic and instrumental systems of value (Leopold, 1949/1987; Latour, 2004). It gives social collectives the false sense that “Science”, as a body of truths rather than a process, can offer a clear and objective ‘right or wrong’ answer to decision-making involving nonhuman animals (Latour, 2004; Meissner, 2014). Who’s needs and interests (stakes) get represented in this spatial change is a question that can and should be supported by ecological knowledge but also requires deliberation of a subjective socio-emotional and political variety to parse out what outcomes are acceptable or unacceptable in problems where animals are entangled in economic, social, political and cultural issues (Kay & Schneider, 1995; Alberti, 2016). Proxy communications about, and not with animals do not necessarily allow the achievement of outcomes which specifically negotiate with the lifeways of individual nonhuman animal species, populations or organisms without further social, emotional or political investments (Essen & Allen, 2017).

Nonhuman animals as equivalent to humans

Stakeholder, though a term which has conventionally been applied solely to humans and their institutions (Starik, 1995), is not intended to be a tool to outright anthropomorphize nonhuman animals. In its pure form, anthropomorphism is the description of nonhuman animal lives within

human narratives of social life as if those narratives were universal and not the specific result of human sensory experiences, language and historical context (Karlsson, 2012). While anthropomorphic metaphors can be seen as helpful ways to transgress a human-animal boundary in popular discourse, they must be tempered with uncertainty about how accurately we can actually speak to the relative symmetry or asymmetry of nonhuman animal experience (Ibid.). Anthropomorphization can result in one of two extremes: Animals, as humans, but ones that cannot communicate symmetrically with us, become “cuddly, furry, child-like dependents” (Haraway, 2003, p. 36), or animals subjected symmetrically to human norms and laws become murderers, trespassers and thieves as they attend to their daily needs for food and territory (Haraway, 2003; Rudy et al., 2016). I see stakeholder as a mode of thinking through nonhuman animal needs and interests that does not rely on trying to make nonhuman animals more human. This is one of the major benefits of a communicative stakeholder concept among human groups, which recognizes and tries to validate different human positions of knowing and understanding reality in a spatial planning process (Booher & Innes, 2002). The animal-as-stakeholder is just an acute extension in allowing those fundamentally different ‘animal ways’ of experiencing the world to exist without the need for anthropocentric symmetry or equivalency.

Why Animals?

While there are many important human-nonhuman value relationships that affect lifeforms outside the kingdom Animalia, this report focuses on animals because they have what Leopold (1949/1987) describes as “motive power” (p. 137), a tendency to be noticeable, charismatic and bring the spark of life to a landscape. Given that a discussion of nonhuman stakeholdership is already abstract, animals are a usefully tangible and concrete gateway into a broader conceptualization of nonhuman stakeholdership in spatial planning. Borrowing from the umbrella conservation concept, members of kingdom Animalia may also be an important theoretical umbrella, an easier place to begin deconstructing and contesting anthroponormative planning assumptions than mosses or mushrooms.

2.5 Toward animals-as-stakeholders

Following Leopold’s (1949/1987) understanding of political and economic systems as subcategories of ethics, I understand urban spatial planning itself to be a cooperative mechanism in ethics which seeks to regulate how land is used, modified and arranged in order to sustain quasi-stable coexistences of dense populations with varied needs and values. It is, as Leopold and Haraway suggest, just one advanced form of ‘symbiosis’ that ensures mutual benefit and

coexistence between profoundly different living beings. This symbiosis is at once, a matter of ecological science, an empirically supported perspective on the stability gained through complex webs of life, and a matter of social science, an acknowledgement that how humans make decisions is deeply rooted in the motives provided by their interpersonal relations and values.

Within recent anthroponormative planning theory, the desire to improve the ethics and efficacy of spatial planning practice has led to the emergence of the concept of the "stakeholder" as a central concern in the legitimization and successful outcome of planning procedures (Conrad et al., 2011; Forester, 2012; Metzger, 2013; Sager, 2018). This followed what has been described as North American and European planning's 'communicative turn' which actively sought to respond to a history of spatial injustices that resulted from the tokenism of mid-century planning practice by erecting more transparent and participatory practices of spatial planning (Sager 2018). In this 'turn', the right/capacity of planners and allied fields to interpret what is in the best interest of urban stakeholders *in their absence* has been critiqued (Ibid.). Rather than viewing the city as the construct of empowered experts and legal pre-conditions, this communicative turn has authorized 'others', from a variety of socioeconomic and cultural backgrounds to speak for what the future of their urban habitat would/should hold (Sager, 2018, 2020). This has conceptually changed the role of spatial planning from that of the authoritative engineer/architect of urban form, to one of coordinator or mediator of polyvocal urban stakeholders (Metzger, 2013). As communicative planning theorist, Sager (2018) states the issue: "Communicative planning is...a participatory and dialogical endeavor involving a broad range of *stakeholders* and affected groups in socially oriented and fairness-seeking developments of land, infrastructure and public services." (p. 93, emphasis added).

Haraway's (2016) 'Making kin', requires acting to open-up lines of meaningful interpersonal communications to the nonhuman. The endeavor of communicative planning theorists to open dialogues with urban 'publics' outside of rational technical planning institutions is a similar effort (Sager, 2018). They are both endeavors to help those who have been previously conceived of as 'objects', silent entities that can be managed rationally and externally, into subjects, vocal entities with individual needs, interests, desires and values (Braidotti, 2006; Despret, 2008). However, the 'stakeholder' concept used to achieve *subjectivity* in communicative planning, remains widely conceived as exclusive to human entities (Metzger, 2016a). The achievement of animal subjectivities has been hindered in planning practice by normative human-nonhuman binaries (Castree, 2003; Metzger, 2016a). Conventional communicative planning theory, while desiring to speak ethically for 'all' residents of the city, has remained unable to bridge the discursive and ontological human-nonhuman gap (Metzger, 2016a). Bringing hybrid nonhuman ethics of concrete

affections and inventive connection to the practice of spatial planning means bringing nonhuman animals to a communicative planning practice in ways that present an ontological and technical challenge to planning communication and knowledge-making practices between species (Ibid.). It requires understanding the human and nonhuman as part of the same social and material continuum in decision-making processes results in outcomes which better support the needs of both (Bresnihan, 2016). It is a path toward fostering a *socioecological symbiosis* between species in urban communities. I seek to use the word "stakeholder" to intentionally bring along all of the connotations of a more passionate, personal, and performative relationship that has hereto largely been granted only to human participants in communicative planning processes (Starik, 1995; Wolch, 2002; Houston et al., 2018). However, who is a 'stakeholder' can not be taken for granted as a stable and finite category of entities (Starik, 1995; Metzger, 2016a). Moving toward a perspective of animals-as-stakeholders requires being especially critical and deliberate about how the 'stakeholder' is defined as a role in communicative spatial planning (Metzger, 2016b).

3. Research question ii) 'Who is a stakeholder?'

The purpose of this question is to define the 'stakeholder' itself, not in a lexical sense, but in the way that it is understood as a role within spatial planning processes. To do so I will perform a literature review of stakeholder theories from conventional practice, and new ontological positions that challenge static, hierarchical and positivist notions of the stakeholder in participatory and communicative planning systems. I will use the findings of this literature review to construct my own definition of a stakeholder which can appropriately transgress a human - nonhuman boundary. This definition provides me the building blocks with which I will approach my case study research.

3.1 'Being' stakeholder: conventional approaches to stakeholder theory

Since the mainstreaming of participatory methods in planning, the question of who constitutes a legitimate stakeholder has become a primary facet of planning and managerial theory debate (Starik, 1995; Metzger, 2016b). Because who is a stakeholder influences greatly the outcome of participatory processes, making a definition that is fair and objective has constituted a great deal of effort from scholars in these fields (Metzger, 2013). The 'stakeholder' entered spatial planning through business management theories (Starik, 1995) so I will begin there in order to understand the range of contemporary understandings of this word.

3.1.1 MacMillan and Jones - The defensive stakeholder

MacMillan and Jones (1986) defines a stakeholder as “an individual, a coalition of people, or an organization whose support is essential or whose opposition must be negated if a major strategic change is to be successfully implemented.” (p. 65). Their view places the stakeholder as a kind of obstacle to the activities of an organization. For them it was important that organizational leaders identify, beforehand, who is a stakeholder in their project and obtain consent from them in order to avoid or negate potential conflicts during implementation. In this view it is not automatically relevant if someone opposes a project; what matters is that they have the potential to stand in the way of a “strategic change” being “successfully implemented.” To be a stakeholder in this conception of the word, means having enough power in a political-economic sense that you present an obstacle to the fulfillment of the organization’s plans (Starik, 1995).

3.1.2 Clarkson - The entitled stakeholder

A second related set of theories view ‘stakeholderness’ as an issue of bundled interests, rights and claims. For Clarkson (1995) stakeholders are all “persons or groups that have, or claim, ownership, rights or interests in a corporation and its activities, past, present or future.” (p. 106). This definition gives entree into the concept of “rights”, which in this context are obligations and responsibilities attached to a legally binding arrangement (Starik, 1995). Ownership of stock in a corporation seems to be the primary concern for Clarkson’s field, but rights can also be cemented through legal obligations, contracts and professional relationships. Clarkson’s definition is more about the legitimacy of a process built on respect for rights and interests, and not about how the stakeholder impacts or deters the outcomes of that process.

3.1.3 Dewey and Freeman - The affected stakeholder

Dewey’s (1927/2016) definition of “The Public” as “all those who are affected by the indirect consequences of transactions to such an extent that it is deemed necessary to have those consequences systematically cared for” (p. 69) can be read as a proto-definition of stakeholder still widely used by communicative planners (Metzger, 2016b). The important phrase from Dewey’s work “all those who are affected”, dispenses of any notion that a stakeholder needs to have political-economic power, or formally codified rights in order to be validated. All that matters is that, in performing a “transaction”, an organization is responsible to listen and care for all those whom

the transaction affects. The care that is offered is attached to a power-holder's obligation to respect the needs of those they affect. Freeman (1984) returns to Dewey's definition with its focus on "care" and "affects" to explicitly define stakeholders as "any group or individual who can affect or is affected by the achievement of the organization's objectives." (p. 46). Freeman offers a simple stakeholder definition that would include both those with the political-economic power to affect and those to whom powerholders are responsible for affecting.

Freeman and Dewey both open a conception of stakeholder that goes beyond solely political-economic power holders or codified obligations. Stakeholders from the perspective of "all those who are affected" may include those who have no voice, or do not or cannot use their voice within the organizational environment of a relevant question. Thus, *who is a stakeholder* according to these definitions is not only those who stand up and claim their "stakes" proactively but requires that decision makers actively identify and seek to include those who are inherently stakeholders as a responsibility. Freeman's more affirmative approach emerged in recognition of the various structural inequities that deprive those affected by decision-making from autonomously exercising political-economic power (Starik, 1995; Essen & Allen, 2017).

3.2 Critical challenges to conventional stakeholder theories

In conceiving of a stakeholder, all of the previous definitions ranging from the purely defensive, to the proactive and ethical, conceive of the "stakeholder" as a pre-existing self-authenticating entity with a certain fixed set of interests that can be identified and discovered by diligent work of the project leadership (Tryggestad et al., 2013; Metzger, 2016a). A variety of critical perspectives from both planning theory (Metzger, 2016a) and project management (Tryggestad et al., 2013) have begun to question the positivist notion that a stakeholder is something that can be objectively and statically defined in this way.

3.2.1 Project temporalities and externalized publics

In Freeman's stakeholder definition, identifying everyone who is "affected" requires knowing what the effects of a project are prior to selecting stakeholders. This may mean that a project has already been developed to a high enough degree of resolution that its effects are well defined. If that is the case, this implicitly excludes stakeholders from having a meaningful impact on the outcomes of a project. Instead, it places them, much like MacMillan and Jones' definition, as

potential obstacles to be negated in the implementation of a project already in motion. These stakeholders are thus not conceived as co-creators of urban places, but externalized publics that need to be persuaded or appeased in order to avoid delays and conflicts. This way of thinking has been widely criticized for its production of superficial forms of participation that are designed to make stakeholders *feel* included and consulted while they are marginally impactful upon project outcomes (Conrad et al., 2011; Fisher et al., 2012).

Alternatively, identifying everyone who is affected prior to commencing the bulk of project planning and development, might mean implicit exclusions based on effects that are not yet and cannot yet be known (Tryggestad et al., 2013). For example, if a planning agency can identify 'all who are affected' by a proposed train project, it is likely that they have already determined the route for this train. If the initial set of stakeholders who are invited deliberately to comment on the project cause an alternative routing, the set of relevant 'Freeman-esque' stakeholders are thus changed. It becomes possible then that the group of who has been included as a stakeholder is no longer the same group as all those who are considerably "affected" by the project. Any limited group of stakeholders have the potential to become mere NIMBYs, pushing project externalities off onto those who have been excluded. Therefore, Tryggestad et al. (2013) believe that who is a stakeholder cannot be a pre-established and static definition but is constantly in a dynamic and shifting relationship as a project changes, sometimes as a result of the stakeholders themselves. If we reject the idea that stakeholders are only chosen ahead of time, but instead see how they emerge as a project unfolds, then it becomes untenable to think of stakeholders as a predefined list selected by authorities in charge.

3.2.2 Unbounded stakeholder environments

MacMillan and Jones' (1986) stakeholder definition has been criticized as explicitly exclusionary to the marginalized and voiceless by relying on stakeholder status tied to political-economic power in a conventional sense (Starik, 1995). Clarkson's stakeholder definition attaches itself to laws, contractual obligations and rights which are slow to change and implicitly only change if larger groups of political-economic power holders take an interest in doing so. Freeman's (1984) definition has thus become more widely used in communicative planning practices that seek demonstrably democratic and just procedures in which stakeholders are partners rather than externalities (Starik, 1995; Tryggestad et al., 2013). But Freeman's definition remains oversimplified and problematic, for by its logic, citizens of the Maldives should participate in plans involving a highway in Helsinki as they would be affected by those planning decisions through the

cumulative sea-level rise wrought by global warming of the highway's car-users (Swyngedouw & Heynen, 2003; Tryggestad et al., 2013; Metzger, 2016a). A list of who is affected by or affects a project is limitless, if this definition is taken literally. A threshold or frame as to who is legitimately affected *enough* and who isn't becomes a necessity to planning processes (Metzger, 2016a).

In the end the people framing the stakeholder environment according to Freeman's, or any similarly emancipatory definitions, must have groups or individuals which they exclude, or the participatory process becomes unwieldy (Tryggestad et al., 2013; Metzger, 2016a). Usually in the contemporary culture of planning's conviviality with the public, exclusion is not deliberately planned but occurs anyway (Metzger, 2016a). Participants are those that just happen to be well connected to the planner's avenues of communication, speak the same language and have the time and energy to participate (Ibid.). This creates implicit exclusions that default to status quo hierarchical political-economic power dynamics instead of really representing all who affect and are affected (Ibid.). Thus, Metzger (2016a) claims that no planning process can succeed in legitimizing the stakes of such a large and unbounded group. To him, that planning processes in democratically engaged European and North American cities give the perception of being infinitely inclusive is a subterfuge that does more harm than good. Following Freeman's (1984) definition does not mean that no one is excluded, because exclusion is a pragmatic necessity in a world of limited time, resources and political will. It means that underlying and uncriticized, 'common-sense' categorization does the work of excluding without formal acknowledgement that this exclusion is happening. For Metzger (2016b), one of the most evident 'common-sense' exclusions is that of nonhuman animals, which are automatically assumed to be inert, object-like members of the landscape incapable of political communications.

3.2.3 Political Subjectivity

Hinchliffe et al. (2005), Tryggestad et al. (2013), and Metzger (2014a, 2016a) problematize a conception of stakeholders as fixed entities in a decision-making process, which arrive to a project or problem with a fixed position that represents the needs and interests of an authentic self. This view is "politically objective," one that treats participants as rational beings that will act in their own interests and imagines those interests are defined by certain attributes of their identity: gender, age, species, race which make their responses to a political problem more or less predictable and representative of the identity group as a whole (Metzger, 2014a). Political subjectivity is a more nuanced view. It argues that people are not consistent or logical in their political positions but can connect or disconnect from certain political issues subjectively based on contexts, guided by the

actions of their peers, media, certain sensational events or rhetorical appeals (Ibid.). In this system there is an indeterminate distributed 'knowing' in this web of expectations, affect and subjectivity (Butler, 2012). The reality belongs to no one. This does not mean that we can merely make things up, but what constitutes accepted knowledge in a political context is a co-construction formed through subjective relationality, not objective and pure pre-existence (Despret, 2004; Butler, 2012). This view contends that reality does not pre-exist and then is viewed differently by different beholders like a painting in an art gallery, but is a production of science, communications and politics as they unfold in the present (Haraway, 2003; Butler, 2012). All the viewpoints are inherently related to the same material things but influenced by positions within networks of communication/observation about that thing (Alcadipani & Hassard, 2010). As a project unfolds, both the physical environment of the project and the beings affected have the potential to change their interests, needs and opinions in dynamic and interconnected ways (Tryggestad et al., 2013).

3.3 'Becoming' stakeholder: relational approaches to stakeholder theory

"Reality is an active verb, and the nouns all seem to be gerunds...beings do not preexist their relatings...The world is a knot in motion." - Donna Haraway 2003, p. 6

The alternative approach to conceptualizing stakeholders suggested by these criticisms is to recognize that stakeholder is not a noun that describes an a-priori subject that can be diligently identified through an objective, technical or even moral discussion (Tryggestad et al., 2013). Instead these voices from political philosophy, planning theory and business management suggest a completely alternative stakeholder concept where 'stakeholder' is an active verb, a process of becoming involved in a project's outcomes through one's relationship to the other stakeholders in a project (Houston et al., 2018).

3.3.1 Actor network theory

The foundation of this approach is Actor Network Theory (ANT). In their review paper of this methodology, Alcadipani and Hassard (2010) describe ANT succinctly as an "attempt to address by which means a diffuse and complex system, comprised of humans and nonhumans, 'becomes networked.' The approach implies that organizations and their components are effects generated in multiple interactions, rather than existing merely in the order of things." (p. 425). ANT is "read as investigations of the assemblage of living realities through contingent and situated activities and

not as instantiations of broader structural processes." (Hinchliffe & Whatmore, 2006, p. 124). In other words, the use of ANT "has been part of a movement away from a functional emphasis on organization as a discrete structural entity and towards the study of processes and practices of organizing" (Alcadipani & Hassard, 2010, p. 420). Whether those processes are the codified rights and claims created by laws or the legitimization process inherent in political-economic power hierarchies, these are seen as merely part of or internal to actor-actor relations, not superseding the overall geometry of individual relations (Fig. 3) which arrives at decisions (Ibid.). Through ANT, I conceive of 'stakeholderness' not as a hard definition of one's political-economic legitimacy, ethical needs or legal-governance rights, but a dynamic interplay of all these factors as they are provoked and activated in relation to others in a decision-making space.

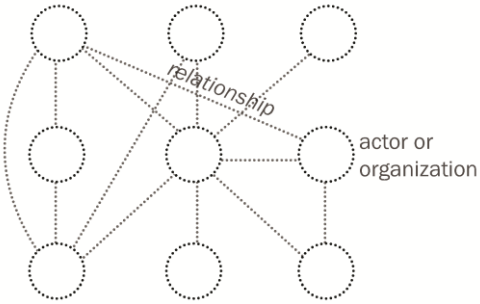


Figure 3. Actor networks:
Actor networks demonstrate how diffuse agents, actors or organizations become networked through their relationships.

3.3.2 Sociology of translation

The ANT method deliberately seeks to overcome a distinction between information produced by social relationships, such as between politicians and constituents and information produced by scientific relationships, such as between ecologists and frogs (Callon, 1984; Emel et al., 2002). The information may be exchanged using different methods: constituents vote and write letters; frogs "vote with their feet" and write evidence of their presence in the landscape (Essen & Allen, 2017). But the information in either case is not more or less free of the relationships that translate it (Callon, 1984). Callon (1984) calls this the "Sociology of Translation". Since all information eventually flows through humans with a situated, contingent and relational position to the things with which they gather information, there is no preexisting truth that is just 'there' waiting to be discovered, there is only the translations of information from one position in a network to another (Fig. 4). In this non-positivist view, the information is generated in the act of relationship between the observer and observed, or the communicator and listener, as a relational effect (Alcadipani & Hassard, 2010). Once relationships have formed, the sociology of translation shows how information flows along those lines of relation. Therefore, relationships are critical to understanding who in an actor network has what knowledge needed to make decisions in consideration of the

needs and interests of others in the network. In relation to nonhuman animals I have identified three basic forms of information flow:

1. Communication of absence or presence – information, like visual identification or evidence of nesting that can establish that a stakeholder is present in a location and thus relevant to a planning problem in or near that location (Hinchliffe & Whatmore, 2006).
2. Communication of stakes – information pertaining to what a stakeholder wants, values or needs relative to a specific planning problem (Callon, 1984; Starik, 1995).
3. Negotiations – dialogic (two-way) communications about what should happen relative to what multiple stakeholders want, value or need from a planning problem (Booher & Innes, 2002).

While all three of these information flows can occur through the same relationship in a sociology of translation, it is often the fact that communication that establishes presence/absence (such as a life scientist performing a species inventory) occurs through a different relationship than that which establishes the stakes involved (such as a different external expert on the species or taxa in question) and yet still different relation from those who engage in discourses regarding what should happen as a result of this information (Callon, 1984).

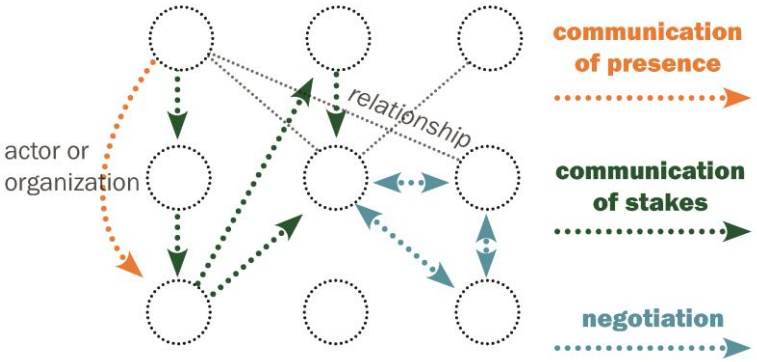


Figure 4. The sociology of translation:
The sociology of translation conceives of information flow through actor network geometry, rather than the permitting information to exist outside networks as a stable objective truth.

3.3.3 Decision-making space

Using the insights of ANT I understand ‘Becoming’ a stakeholder in spatial planning as a phenomenon that happens as a result of at least two actors forming a relationship that results in a sociology of translation that sustains information flows (communications) relevant to the outcome of a specific planning problem. I thus conceive of an important distinction between *being* an actor, as anything that acts within physical reality, and *becoming* a stakeholder, as something that

communicates stakes specific to a planning problem. An actor always exists and will continue to exist after a specific planning problem is ‘resolved’, but stakeholders exist only in relationship to such a problem. Thus, I conceive of a ‘decision-making space’ (Fig. 5) a temporary frame that occurs when actors in relation to a planning problem become enrolled in the web of relationships that constitute decision-making toward the outcome of that problem. Stakeholders can enter and leave this decision-making space through acts of relation. Thus, instead of choosing all possible stakeholders and actively including them in decision-making spaces (which would be unwieldy if not impossible) this concept envisions decision-making spaces as permeable, open-ended assemblages in constant coevolution.

These decision-making spaces include all those communicative agents, or stakeholders, which occur in the ‘here and now’ relative to a specific planning problem. However, information often comes from other times and other places outside this immediate network. In the diagram, I find it helpful to distinguish between direct stakeholder to stakeholder information flows and indirect ‘external influences’ wherein a stakeholder incorporates information that has been generated outside the decision-making space. This information may include the law, historical events and broader cultural and societal forces. In relation to animals, these external influences often regard scientific research generated about members of a taxonomic group in other times and places, which stakeholders generalize in application to the present problem (Hinchcliffe et al., 2005). External influences fill an important gap in actor network theory adopted in a pure sense (Alcadipani & Hassard, 2010). It allows the possibility that non-material ‘actors’ like abstract concepts, the law, and past knowledge enter into relevant consideration in a deliberation.

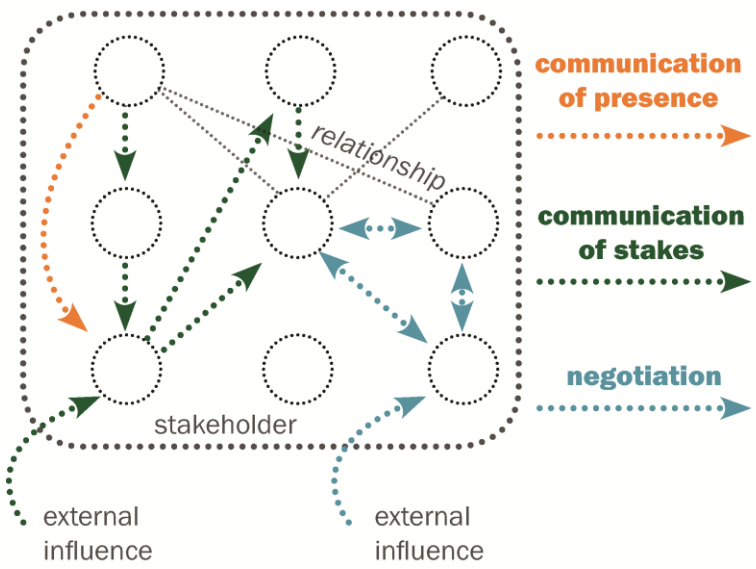


Figure 5. Decision-making space with external influences: Actor networks are infinite, but stakeholder networks are bounded by relevance to the immediate context of a specific planning problem. External influences is information outside of a stakeholder network but which is still relevant and employed relative to the decision being made.

3.3.4 Quasi-collective/quasi-individual relations

A stakeholder can be understood as a Cartesian self, the smallest unit of individual consciousness but in a decision-making space there is also the possibility to conceive of a stakeholder as an organization, assemblage or institution which in the web of planning communications speaks univocally (Castree, 2003; Alcadipani & Hassard, 2010; Nygren et al., 2017). It is perhaps unjust to group individuals indiscriminately into categories based on superficial traits like professional group, race, species or organization affiliation without allowing them the possibility to speak for themselves, but collectives can produce some form of uniform outward relation to other planning subjects (Callon, 1984; Essen & Allen, 2017). If a club agrees that only their press-officer will speak for them, they form into a collective which speaks univocally only through this representative. There is an important hierarchy of scale, whereby zooming in there are individuals within organizational collectives but those collectives can be sub-collectives of other collectives, and so on (Clowney, 2013). To permit a model of flexibility in these multi-scalar organizational structures, Haraway (2016) suggests a nuanced approach to stakeholder subjectivities which allows both possible formations, of “quasi-collective/quasi-individual partners in constitutive relatings” (Haraway, 2016, p. 64) never purely an individual free from relations, nor purely a group free from constitutive individuals (Fig 6.).

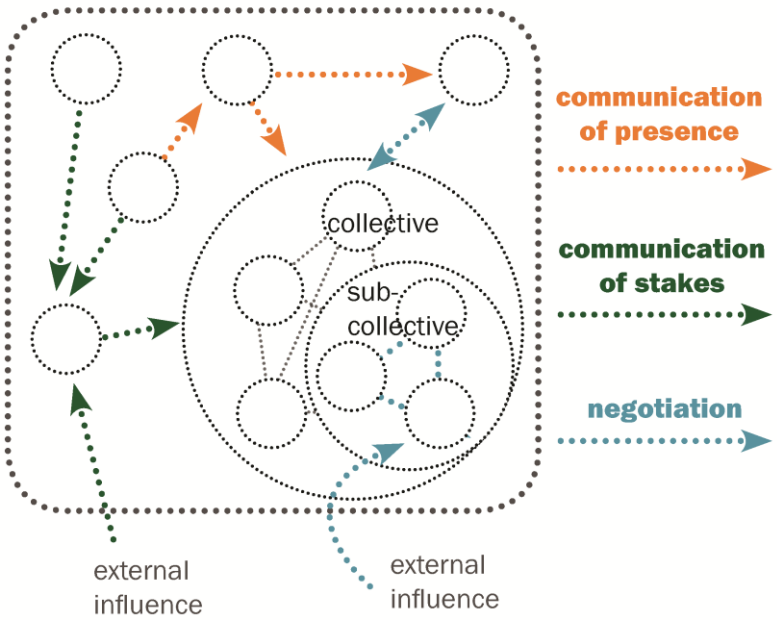


Figure 6.
Quasi-collectives/quasi-individuals.
Nuanced approaches to actor network theory allow the conception of actors as part of conceptual collectives, while remaining cartesian individuals that can exist within collectives at different scales (sub-collectives).

3.3.5 Network power and complexity

While I have here proposed my own theoretical conception of what it means to become a stakeholder, the definition of "stakeholder" will never be universally agreed upon and will be contingent on many contextual and project specific factors. Pragmatically making 'stakeholderness' an open-ended issue of active relationships dispenses of the need for a universally agreed upon definition. The boundary of who is and isn't a stakeholder is not a fixed condition that needs to be agreed upon by all parties or determined by the organization 'in charge.' It is merely a relationship between at least two parties. Stakeholder then is not an absolute binary quality, but a matter of degree. This adopts the concept of network power shared by both ANT and communicative planning theory which specifically focuses on stakeholder-to-stakeholder relationships as the fundamental unit of power, rather than power as rights distributed benevolently by a central authority (Booher & Innes, 2002). Booher and Innes (2002) define power as "a jointly held resource enabling networked agencies or individuals to accomplish things they could not otherwise" (p. 225). A stakeholder with more and stronger relationships to the other members of a project space exercises more influence on outcomes than one who is only related with a single entity (Fig. 7) (Callon, 1984; Booher and Innes, 2002; Metzger, 2013, 2016; Muñoz-Erickson et al., 2016). In my diagrams of a becoming stakeholder decision-making space, I have assigned a network power number (N=#) to the nonhuman animal as stakeholders which represents the number of direct communicative relationships this group sustains within the stakeholder network (Fig. 7).

In addition to membership in organizations and multi-scalar collectives, stakeholders are also part of different societal or professional 'sectors' which focus upon different relevant processes in a planning problem (Booher & Innes, 2002; Grove et al., 2016; Muñoz-Erickson et al., 2016). For example, the 'life science' sector produces information related to natural elements of the project, while the 'administrative' sector is largely responsible for resource allocation toward the project's ultimate outcomes. My conception of the 'Becoming' stakeholder decision-making space incorporates these sectors but true to the principles of actor network theory I do not see them as discrete nodes in a highly structured system, but open and overlapping fields (Muñoz-Erickson et al., 2016). Together with a quasi-collective/quasi-individual point of view my stakeholder approach moves away from neat linear stories of knowledge flowing between the professional categories of scientists, citizen, planner, politician, and allow looser networks of overlapping individual and collective relationships to represent the less rigid reality of multivocal decision-making processes (Booher & Innes, 2002; Alcadipani & Hassard, 2010; Grove et al., 2016; Muñoz-Erickson et al., 2016). In each diagram of animals-as-stakeholders I will note the number of sectors in which information flows (S=#) as a proxy measure for the complexity of their networks (Fig. 7).

3.3.6 Building blocks of a 'Becoming' stakeholder decision-making space

Together, these theoretical components form the building blocks of a relational understanding of the stakeholder as members of a decision-making space (Fig. 7). This concept of the 'becoming' stakeholder avoids giving any entity the narrative power to decide who is and isn't a legitimate stakeholder. It is more authentic to a revelation in the diffuse, networked and open nature of socioecological decision-making systems. In posing the question "How do nonhuman animals become stakeholders in urban planning" I explicitly align myself to a concept of stakeholders as "becoming" entities suggested by the relational and open decision-making systems approach of actor network theory.

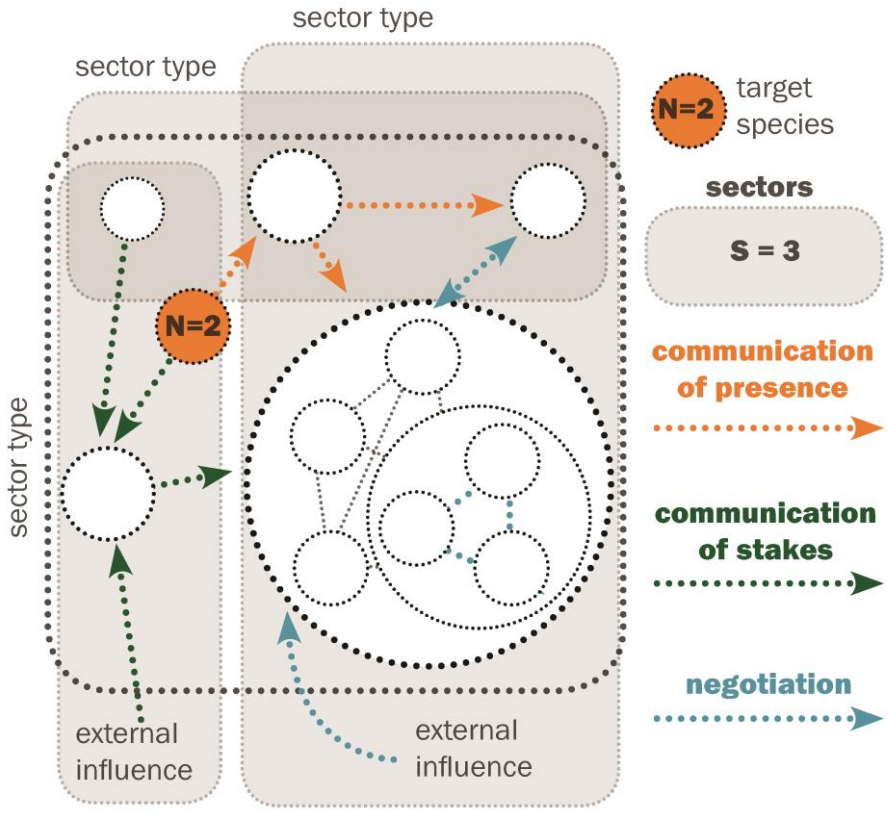


Figure 7. 'Becoming' stakeholder decision-making space.

The 'Becoming' Stakeholder decision-making spaces which will be visualized in this study, include stakeholders, their relations, relevant external influences, sectoral affiliations and the communications which this network supports. The relevant animal stakeholder group will be shown in orange. Quantity "N" refers to the number of direct communicative relationships that group has to other stakeholders. Quantity "S" refers to the number of professional and social 'sectors' through which information flows in decision-making processes relevant to that animal.

4. Research question iii) 'How and when do nonhuman animals *become* stakeholders in urban planning?' Description of the Case Study - Jokeri Light Rail, Helsinki, Finland

4.1 Methods

The question 'how and when do nonhuman animals become stakeholders in urban planning?' is a question that addresses *how*, by what means, methods and apparatus, nonhuman animal stakeholder subjectivities are achieved. In the theoretical position of 'becoming' stakeholders, I do not rest the responsibility or power to enroll nonhuman animals as stakeholders with any one actor or authority but view it as a potentiality that must be brought into existence by both sides of a relationship. I will use the case study to explore a few moments where nonhuman animals have moved/been moved across the line from being politically unrelated *objects* of an environmental background, to achieving a politically relevant stakeholder *subjectivity*.

The case study focuses on communication events within the Jokeri light rail's decision-making process. Descriptions and analysis are based on environmental impact assessments, species surveys, legal documents, press releases, public presentations, meeting minutes, and reports issued to and from planning, government and environmental agencies. Blog posts and social media are used to analyze points of view by individual stakeholders or organizations. To supplement these public communications, I have also had email correspondences with five individual stakeholders:

- J. Syväranta: project manager, Alleco Oy marine and limnological consultancy
- N. Salojärvi: environmental specialist, Raide-Jokeri Alliance
- E. Korpelainen: chair, Pajamäki society
- L. Kuivalainen: spokesperson, Helsingin luonnonsuojeluyhdistys ry (Helsy)
- P. Lindblad: Mätäjoki restoration manager, Helsinki Fly Fishermen Association (HPK)

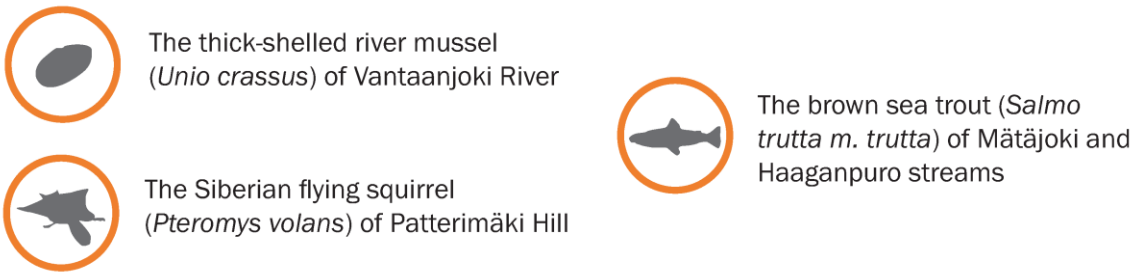
This question also confronts the issue of 'when' nonhuman animals become stakeholders. For the purposes of this case study I understand the light rail here as a project, a *temporary* yoking together of interested stakeholders into a dynamic decision-making space (Tryggestad et al., 2013). However not all stakeholders enter this decision-making space at the same time, or in the phase of a project that is usually understood as 'spatial planning.' New stakes emerged during the

construction activity which were not initially considered or addressed in earlier strategic, master or spatial planning processes.

4.2 Case study background

The Jokeri Light Rail (*Raide-Jokeri* in Finnish) is a 25 km planned 2-rail transit corridor passing through Helsinki and the adjacent city of Espoo (Raide-Jokeri Allianssi, 2020a). The Raide-Jokeri Allianssi (RJA) is a joint venture formed through contracts between the City of Espoo municipal government (client), City of Helsinki municipal government (client), Helsinki City Transport (client), Ramboll (planner), Sitowise (planner), Sweco (planner), NRC (general contractor) and YIT (general contractor) for express purpose of constructing the Jokeri Light Rail (Raide-Jokeri Allianssi, 2020a).

A master plan reflecting the current route (Fig. 9) was approved in 2016 (Raide-Jokeri Allianssi, n.d.; Ramboll Finland Oy, 2015). Construction began in 2019 (City of Helsinki, 2019). The Jokeri's route passes through a mosaic of built and unbuilt landscapes including four of Helsinki's five 'green fingers', forested corridors that form the skeleton of the region's urban structure as well as numerous small parks and highly vegetated suburban neighborhoods (Ramboll Finland Oy, 2015; Härö & Kullberg, 2019). It also borders two Natura2000 wildlife conservation areas (Laajalahti and Vanhankaupunginlahti) and crosses through the Vantaanjoki River Natura2000 corridor (Ramboll Finland Oy, 2015). This new light rail will pass through an intermediate ring of the region's urban fabric, which could be described as suburban, but contains denser clusters of mid-rise development near transit stations, as well as two university campuses (Ibid.). Given the character of this landscape, human-wildlife relationships are especially pronounced as moderate densities of human settlement abut remnant forests, wetlands, agricultural plots and mature garden suburbs. The planning and construction of this light rail through this diverse multi-species landscape activated and enrolled a variety of stakeholders of human and nonhuman variety (Toivanen, 2019). Three examples of nonhuman animals becoming stakeholders in this planning problem have stood out through their prominent featuring in the press and planning documentation:



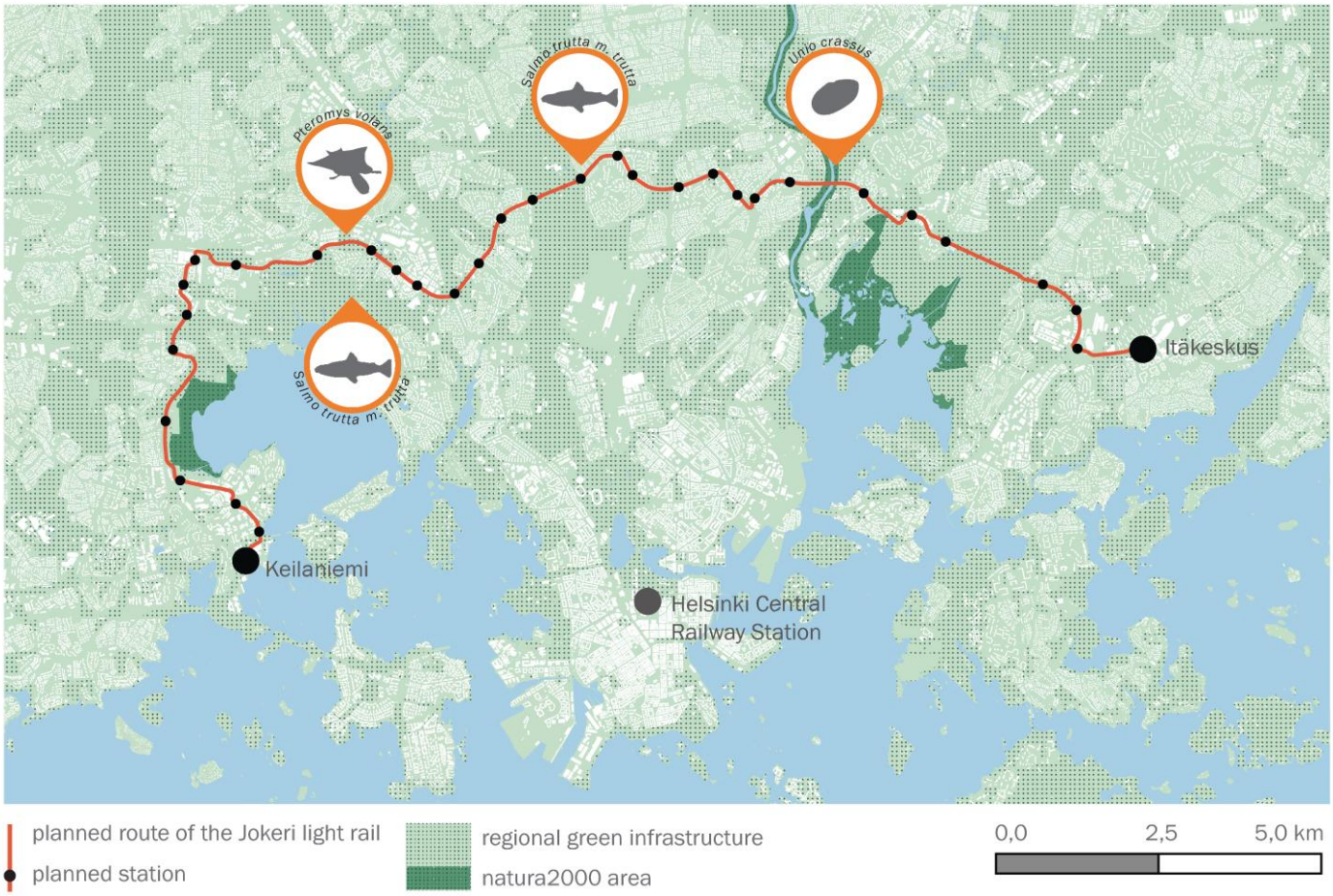


Figure 8. Key map to the case study.
Map data: Helsingin kaupunkiympäristön toimiala / Kaupunkimittauspalvelut, 2016

4.3 The thick-shelled river mussel (*Unio crassus*) of Vantaanjoki River

The Jokeri project master plan completed in 2015 notes the need for a new bridge crossing the Vantaanjoki river as the current bridge is too small and old to accommodate two new rail lines (Ramboll Finland Oy, 2015). In order to accommodate an ample pedestrian underpass and wildlife corridor beyond the river's flood bank, the span of the new bridge is considerably greater than the existing bridge (Härö & Kullberg, 2019). To construct a structurally feasible bridge, engineers decided midspan footings would need to be set in the riverbed, causing a potential disturbance to riverbed fauna (Ramboll Finland Oy, 2015; Härö & Kullberg, 2019).

Marine consultants Alleco Oy were hired to visually survey aquatic life at the proposed bridge location in autumn of 2017 (Syväranta et al., 2019). Their survey confirmed the presence of thick-

shelled river mussels *(Unio crassus)*, bivalve mollusks protected according to the EU Habitats Directive Annex IV and Finnish Nature Conservation Act (Nieminen & Ahola, 2017; Ojala, 2018; Syväranta et al., 2019). According to these acts, the breeding and resting sites of *Unio crassus* may not be lawfully disturbed (Nieminen & Ahola, 2017; Syväranta et al., 2019). Citing previous successful relocations of the mollusks, the RJA applied for an exemption to the EU Habitats Directive and Finnish Nature Conservation Act on the grounds that the mussels would be transferred by Alleco to a suitable receptor site upstream of the bridge (Härö & Kullberg, 2019; Ojala, 2018; Syväranta et al., 2019). The exemption was granted by regional authorities (ELY keskus) in spring 2019 (ELY-keskus, 2019; Härö & Kullberg, 2019).

Over the following year, Alleco identified a suitable upstream receptor site by performing test dives (Syväranta et al., 2019). With RJA, they selected and received approval to use a site near Oulunkylä waterfront park where riverbed composition was suitable for mussel embedment (Ibid.). In winter of 2019-2020, Alleco transferred 1372 live *Unio crassus* mussels, along with all other mussel species present, from the bridge site to the upstream receptor site (Syväranta et al., 2019, 2020). Alleco has been hired to monitor the success of mussel populations at both the bridge site and receptor site through 2022 (Syväranta et al., 2020).

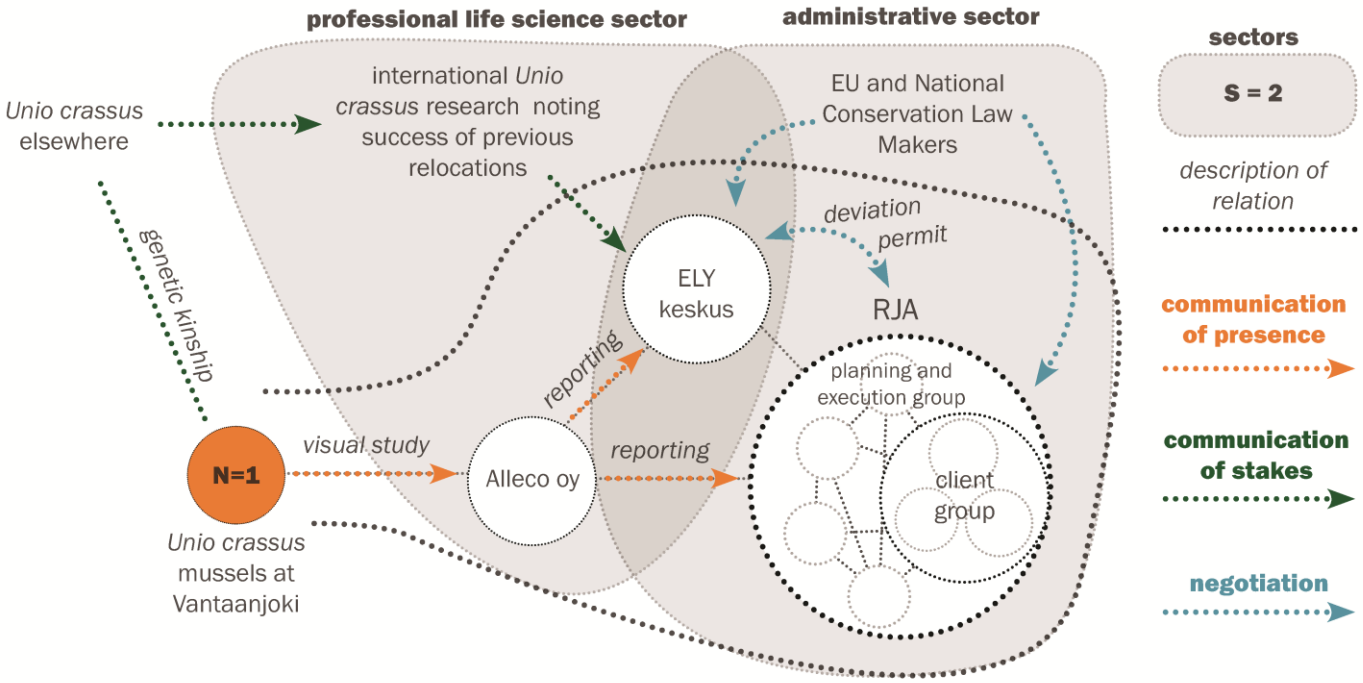


Figure 9. Thick-shelled river mussels (*Unio crassus*) as stakeholders

4.3.1 How and when did thick-shelled river mussels (*Unio crassus*) become stakeholders?

Without the statutory concerns of the EU Habitats Directive, I find it highly unlikely that any of the riverbed fauna would have become stakeholders. Through the law, RJA was required to enroll the mussels as stakeholders or risk legal damages and they did so by selecting a knowledgeable intermediary, Alleco Oy Marine Biology and Limnological Consultants (Syväranta et al., 2019). Alleco, through visual study, supported by apparatus of diving equipment and collection buckets (Ibid.), formed a relationship with the mussels through which the mussels were able to communicate their presence, effectively saying, 'we are here.' (Fig. 9). This was the only direct communicative relationship formed with the mussels at Vantaanjoki. This information was then translated to RJA via a series of reports by Alleco Oy (Syväranta et al., 2019, 2020). This constituted the moment that *Unio crassus* at Vantaanjoki river became stakeholders in the Raide Jokeri, as a negotiation about how to address their spatial stakes (the interest in ongoing survival) became part of the flow of information within the Jokeri's decision-making spaces (Fig. 9).

In this case, EU and national conservation law was a critical external condition necessary for the mussel's physical presence to translate into stakeholder status in the flow of information that resulted in spatial decision-making. However, it did not guarantee that the mussels would not be disturbed because the possibility of deviations exist if the law's responsible enforcement agencies find justifiable extenuating circumstances (Nieminen & Ahola, 2017; ELY-keskus, 2019). Thus, rather than spatially modify the bridge route or design, RJA modified the spatial location of the mussels themselves. From another external influence, international research about previous translocations of *Unio crassus*, RJA and ELY keskus determined the best course of action would be to move the mussels upstream. (Ojala, 2018; ELY-keskus, 2019; Syväranta et al., 2019).

4.4 The Siberian flying squirrels (*Pteromys volans*) of Patterimäki hill

Siberian flying squirrels, hereafter, SFS, are listed on the EU Habitats Directive annex IV which prohibits the deterioration or destruction of their nesting sites (Jokinen et al., 2015). Compliance with conservation law requires establishing that a site is home to a nesting population of SFS (Jokinen et al., 2015; Nieminen & Ahola, 2017). Since SFS are small, reclusive, disturbance sensitive and nocturnal, the primary method of establishing the issue of nest presence or absence is to locate SFS feces rather than the mammal itself (Suzuki et al., 2011). These observations are supplemented with the abundance of hollow trees and tree cavities of the right size and shape for nesting (Jokinen et al., 2015).

The Jokeri light rail's 2015 master plan included a reference map with the location of all SFS territories in the Helsinki region based on a city-wide survey performed in 2014 (Ramboll Finland Oy, 2015; ELY-keskus, 2020). The map shows no nesting areas near or in the vicinity of Patterimäki park, the site which would eventually become the center of controversy surrounding SFS (Ramboll Finland Oy, 2015; ELY-keskus, 2020). In 2018, the City of Helsinki commissioned Enviro Oy to perform a comprehensive city-wide SFS survey (Lammi & Routasuo, 2018) which indicates SFS feces were found in Patterimäki park. The map marks feces found north of and along the planned route of deforestation required to accommodate the Jokeri route (Ibid.). The interpretation of the report's authors was that Patterimäki park itself was a foraging area for the squirrels and that only the area south of the park, Pajamäki, constituted a valid nesting habitat (Ibid.).

The route and need to fell trees through Patterimäki park had been part of public planning documentation as early as 2015 (Ramboll Finland Oy, 2015). Pajamäki society (Pajamäki-seura), a neighborhood association composed of residents living adjacent to Patterimäki park, objected to this route in 2015 (Saari-Salomeri & Kivistö, 2015; Pajamäki-seura, 2019b), and filed an official appeal to the Helsinki Administrative Court in 2017 (Pyykkö & Korpelainen, 2017). At this time there was no public knowledge of SFS at Patterimäki, and the objections were based on a combination of cultural values in the site's World War I fortifications protected by the Finnish Antiquities Act, and the recreational values of the park (Ibid.). The appeal was denied by the court, noting that no direct change to historic structures was being proposed, and that the railroad's presence in the park did not constitute a loss of recreational use values for the nearby residents (Helsingin Hallinto-oikeus, 2018).

In April of 2019, RJA crews demarcated trees to be felled using a spray-painted 'X', which made materially visible to local users of the park how many trees and where trees would be felled (Yle, 2019). Around this time, Lammi & Routasuo's 2018 city-wide flying squirrel survey had become available for public review (Pajamäki-seura, 2019a; E. Korpelainen, personal communication, 1 October 2020). Volunteers organized by the Helsinki Association for Nature Conservation (Helsingin luonnonsuojeluyhdistys ry, abbreviated 'Helsy') and Pajamäki society performed an independent survey of SFS feces and nest trees (Välipirtti et al., 2019; L. Kuivalainen, personal communication, 2 October 2020). As a result of this volunteer survey, Helsy filed a complaint against the planned tree felling, claiming that Patterimäki park constituted an SFS nesting area and that the city's characterization of the park as a 'foraging area' was misleading (Ibid.). This resulted in the regional ministry suspending the tree felling until the claims were addressed (Yle, 2019). After a new detailed SFS survey of the site was performed in May of 2019, the position of RJA

remained that the areas of the park where felling was planned were foraging areas for the squirrels (Härö & Kullberg, 2019). Based on this new survey, the regional ministry lifted the suspension on felling on July 12, 2019 (Helsingin luonnonsuojeluyhdistys, 2019). Helsy and Pajamäki society proceeded to appeal this decision with the Helsinki Administrative Court, and upon that court's denial of appeal, appealed again with the Finnish Supreme Court (Ibid.). Both appeals centered on the external influence of information claiming that SFS fecal surveys performed in late spring do not provide a reliable picture of presence and nest distribution (Välipirtti et al., 2019). The Finnish supreme court issued a prohibition on logging in Patterimäki park until a satisfactory resolution was reached (Ibid.). A new fecal and nest tree survey was performed by Enviro Oy biologists, Lammi & Routasuo, in March (ELY-Keskus, 2020). Pajamäki society was also submitting their own fecal reports to the City of Helsinki at the same time, which the biologists confirmed in-situ (ELY-Keskus, 2020; E. Korpelainen, personal communication, 1 October 2020). Combined, this information caused all parties to come into agreement that some portion of the planned Patterimäki park rail corridor did constitute an SFS nesting habitat. The regional ministry recommended finding alternative solutions or obtaining a deviation permit to the relevant provisions of EU Habitats Directive and Finnish Nature Conservation Act (ELY-Keskus, 2020; Kosenen, 2020).

Subsequent conversations in the Jokeri's decision-making space included a recognition of the spatial stakes of the Siberian flying squirrel and attempts to accommodate them through a re-alignment of the rail line. Eight alternative alignment options were researched and presented in the RJA's deviation permit application (ELY-keskus, 2020). By the time of the deviation permit application, rail line to the east and west of Patterimäki had already been completed thus limiting options for significant realignment (ibid). Realignment to the north through the Takkatie industrial area was the option most preferred by Pajamäki society (Paastela, 2020a; Pajamäki-seura, 2020). This option was deemed unfeasible by RJA, requiring the demolition and acquisition of too many private properties, safety issues imposed by the narrowness of the corridor and untenable increases in project costs and execution times (Paastela, 2020a; Raide-Jokeri Allianssi, 2020c). Furthermore, this realignment was expected to increase travel times and the rail's long-term operating cost by adding turns (ELY-keskus, 2020). RJA decided to file a deviation permit to the EU Habitats Directive and Finnish Nature Conservation Act stating that no other satisfactory alternative could be found (Raide-Jokeri Allianssi, 2020c). A deviation permit was awarded by ELY-keskus in July of 2020 on the grounds that the overall success of this SFS population would not significantly deteriorate as a result of the light rail's construction (ELY-keskus, 2020). This deviation permit bound the RJA to take mitigation measures in the form of performing tree felling outside of SFS breeding season and constructing new artificial nest boxes as a supplement to nest trees removed (Ibid.). Based on external research about SFS, RJA and ELY keskus state that landscape

connectivity between northern and southern breeding territories is expected to be minimally affected as squirrels can easily glide over the 20 m rail line gap (ELY-keskus, 2020; N. Salojärvi, personal communication, 9 October 2020).

After the deviation permit had been awarded, Pajamäki society partnered with a new local nature conservation community group, ProLuonto (ProNature) (E. Korpelainen, personal communication, 1 October 2020). They filed a complaint with the Helsinki Administrative Court on the grounds that the conditions necessary to deviate from the provisions of the EU Habitats Directive had not been met (Paastela, 2020b; Pajamäki-seura, 2020). Pajamäki society alleges that feasible satisfactory routes do exist but were not explored in earnest (Pajamäki-seura, 2020). These complaints are required to be reviewed by the Helsinki Administrative Court before RJA's work at Patterimäki can recommence (N. Salojärvi, personal communication, 9 October 2020).

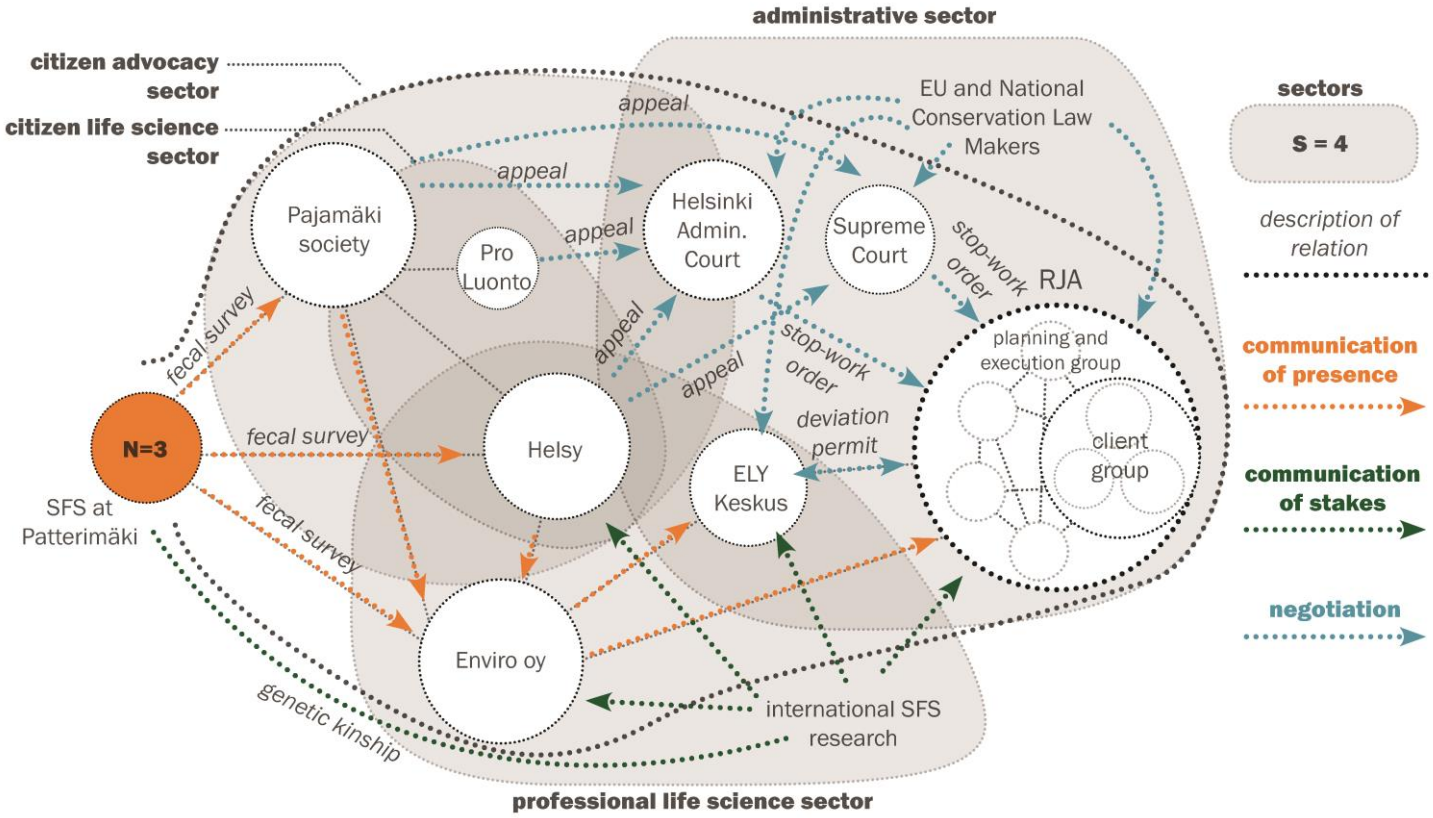


Figure 10. Siberian flying squirrels (*Pteromys volans*) as stakeholders

4.4.1 How and when did Siberian flying squirrels (*Pteromys volans*) become stakeholders?

When construction began in 2019, no changes to the Jokeri's route or detail design had been proposed as a result of SFS presence at Patterimäki. The plans at this location were widely understood by stakeholders to comply with conservation requirements for SFS and debates focused on historical, recreational and cultural values. At that time, it was possible that SFS would have never become stakeholders in the Jokeri's spatial planning even though feces had been found along the route in 2018. SFS feces are an apparatus for the squirrels to communicate their presence, saying 'I was here.' However, this does not immediately lead to invoking the provisions of conservation law, because of the caveat that sites must be used for nesting to invoke statutory conservation requirements (Jokinen et al., 2015; Nieminen & Ahola, 2017). The amount of effort entered into surveying sites for SFS presence, when that survey is performed, and how the density and distribution of fecal matter and potential nesting trees are interpreted by the surveyors can produce widely different assumptions about whether or not a site constitutes SFS nesting territory (Ibid.).

The initial lack of stakeholder status that the SFS had in the spatial planning surrounding the park up until felling was about to begin in 2019 demonstrates how specific humans had to form specific relationships to these squirrels in order for them to become stakeholders. To say that the SFS became stakeholders because of their listing in the EU Habitats Directive Annex IV would thus be an oversimplification. The SFS of Patterimäki park would not have become stakeholders unless they had established a direct relationship (Fig. 10) to Helsy's and Pajamäki Society's members, who's independent fecal surveying and interpretation of SFS presence, led them to allege that the requirements of conservation law were not being met by the RJA (Välipirtti et al., 2019; E. Korpelainen, personal communication, 1 October 2020).

For the squirrels, stakeholdership is entangled in other political goals and care practices alongside their EU and Finnish conservation status. Helsy's stewardship relationship to the squirrels and the various political goals of Pajamäki society to preserve a recreationally and aesthetically valued park, overlapped with the SFS's own presumed spatial stakes to live and nest in the mature forest with a continuous canopy. In working as citizen scientists to document SFS in their neighborhood park (E. Korpelainen, personal communication, 1 October 2020), the members of Pajamäki society also began to foster more socioemotional connections with the squirrels, as was evidenced by social media posts, and home videos of squirrel encounters (Pajamäki-seura, n.d., 2019b; Salomeri, 2020). I argue that these relationships may have started as a pragmatic means to achieve the goal of park preservation but transformed into something more socioemotional with

individual human material and temporal investments and human-squirrel micro communications.

Rather than consider Pajamäki society as mere representatives for the SFS, I contend that Pajamäki society and the SFS formed a political partnership. The SFS provided Pajamäki society with a legal pathway that could be pragmatically leveraged to accomplish their shared goals. In return, Pajamäki society offered the SFS their communicative ability to navigate this legal pathway. Once joined with the ecological/scientific legitimacy offered by Helsy, all three formed a powerful political alliance, together much more capable of advancing their overlapping goals than any acting alone. Once Helsy and Pajamäki society's version of the truth, that Patterimäki park was indeed nesting habitat, became shared by the regional ministry, the debate became not, if Patterimäki park was a nesting site, but whether or not the Jokeri's route and design could/should be altered in recognition of the SFS's spatial stakes. The SFS of Patterimäki park became stakeholders that remain capable of significantly changing the spatial plans of the rail line at the time of this report. Whether the plans will or will not change is not at this time known but does not in either way undermine this analysis of the SFS's achievement of a powerful stakeholder status (Fig. 10).

4.5 The brown sea trout (*Salmo trutta m. trutta*) of Mätäjoki and Haaganpuro streams

While not represented in the EU Habitats Directive, brown sea trout (*Salmo trutta m. trutta*) are protected from fishing and disturbance during spawning season and some temporary fishing moratoriums have been applied to coastal areas near spawning streams (Freyhof, 2011; HELCOM, 2013; Nieminen & Ahola, 2017). Brown sea trout spend their adulthood in the sea but require rapid flowing, clear, cool, well oxygenated and gravely freshwater streams for spawning (Luontoportti, n.d.). Due to anthropogenic damming, pollution, channelization, erosion and deoxygenation of streams and rivers, suitable spawning sites were historically almost completely lost in Finland and remain critically rare (Laji, n.d.; HELCOM, 2013). This historical degradation has prompted stewardship actions of nonprofits and government agencies targeting the recovery of brown sea trout populations (Virtavesien hoitoyhdistys ry, n.d.a, n.d.d). Brown trout stewardship in the Helsinki region has become pronounced over the last 20 years, with stream restorations led by volunteers throughout the city (Longinoja, n.d.; Haaganpuro, n.d.; Virtavesien hoitoyhdistys ry, n.d.a, n.d.b; Sarvilinna et al., 2012). Three stewardship organizations have led this effort: Virtavesien hoitoyhdistys ry (The Stream Management Association, abbreviated 'Virho'), Helsingin Perhokalastajat ry (Helsinki Fly Fishermen Association, abbreviated 'HPK') and Suomalaisen kalastusmatkailun edistämisseura ry (Finnish Fishing Tourism Promotion Association, abbreviated 'SKES') (Virtavesien hoitoyhdistys ry, n.d.a). Restoration involves 're-naturalizing' the flow and

course of a stream by removing barriers to fish migration, adding large rocks and boulders to replicate natural rapids, and spreading a layer of gravel on the riverbed for sheltering trout eggs and parr (Virtavesien hoitoyhdistys ry, n.d.c). After initial interventions, rocks and gravel have to be renewed as erosion and sedimentation occur with time, especially in urban areas where low permeability causes sudden fluctuations in flow rate (Ibid.). These three national organizations have spawned smaller location-specific stream stewardship organizations, websites and social media campaigns dedicated to educating residents to prevent pollution and poaching in the restored streams and leading volunteers in the maintenance and creation of spawning suitable rapids and gravel beds (Longinoja, n.d.; Haaganpuro, n.d.).

Haaganpuro is an 11 km long urban stream originating in Helsinki's central park and flowing to Pikku Huopalahti bay (Haaganpuro, n.d.; Virtavesien hoitoyhdistys ry, n.d.b.). Since the early 2000s, restoration and stewardship efforts have led to the removal of dams and renaturalization of flows and rapids along much of the stream's length (Virtavesien hoitoyhdistys ry, n.d.b.). However larger lengths of the stream remain in underground pipes and straightened channels (Haaganpuro, n.d.). About a kilometer of the Haaganpuro stream runs parallel to the planned Jokeri route where it currently flows through a combination of concrete conduits and channelized ditches next to Pirkkolantie road (Bjurström-Laitinen & Leivo, 2020). Given the length of convergence of Haaganpuro with the Jokeri, early plans considered improving the water quality of the stream through landscape interventions (N. Salojärvi, personal communication, 9 October 2020). Detailed designs for the stream were produced in consultation with Virho, resulting in a meandering course with variations in width, auxiliary hard infrastructures to prevent stormwater overflow or washouts and rocky rapids and gravel beds for spawning (Bjurström-Laitinen & Leivo, 2020; N. Salojärvi, personal communication, 9 October 2020).

Mätäjoki is Helsinki's second largest water course after Vantaanjoki (Virtavesien hoitoyhdistys ry, n.d.a). Restoration of the stream as suitable brown sea trout spawning habitat began in 2009 as a collaboration of Virho and HPK (Virtavesien hoitoyhdistys ry, n.d.a; Helsingin Perhokalastajat, 2020b). Since then, HPK has been responsible for directing repairs and improvements to the spawning microhabitats, often with volunteer support from Pitäjänmäki society, a nearby neighborhood organization (Helsingin Perhokalastajat, 2020a, 2020b). The Jokeri light rail route crosses the Mätäjoki at two locations, once over the main course at Strömbergin park and again over a small tributary in Patterimäki park (Härö & Kullberg, 2019). Prior to Jokeri construction, the Mätäjoki exited Strömbergin park via a concrete culvert buried underneath Pitäjänmäentie road (Ibid.). In the 2015 masterplans for the Jokeri, planners suggested studying the possibility of restoring this to a naturalized flow with a pedestrian path and wildlife underpass in conjunction with

the Jokeri's construction (Ramboll Finland Oy, 2015). In 2017 and 2018, RJA consulted HPK and Virho about the designs for a bridge over the Mätäjoki which could accommodate this new path (P. Lindblad, personal communication, 29 September 2020). While the possibility existed of restoring natural flow of the stream beneath the bridge, the design team decided to leave the existing base and sides of the concrete culvert, while opening it up above and providing a pedestrian path on the edge (Härö & Kullberg, 2019). Among other things Virho and HPK raised concerns that complete removal of the culvert base and sides would cause sedimentation and alter the flow rate of the already restored trout spawning habitats downstream, potentially causing more harm than good (P. Lindblad, personal communication, 29 September 2020). The redesign still allows the free movement of fish, as well as a small wildlife corridor for terrestrial species to avoid crossing the rail line or road above the bridge (N. Salojärvi, personal communication, 9 October 2020).

In May 2020, RJA crews provided rock debris collected from the railway excavation activities to be used to repair trout rapids and spawning areas in the Mätäjoki (Raide-Jokeri Allianssi, 2020b). The RJA also provided labor for a volunteer event to clean and place the rocks and gravel (P. Lindblad, personal communication, 29 September 2020). RJA publicized this volunteer event on their blog and YouTube channel (Raide-Jokeri Allianssi, 2020b, 2020d).

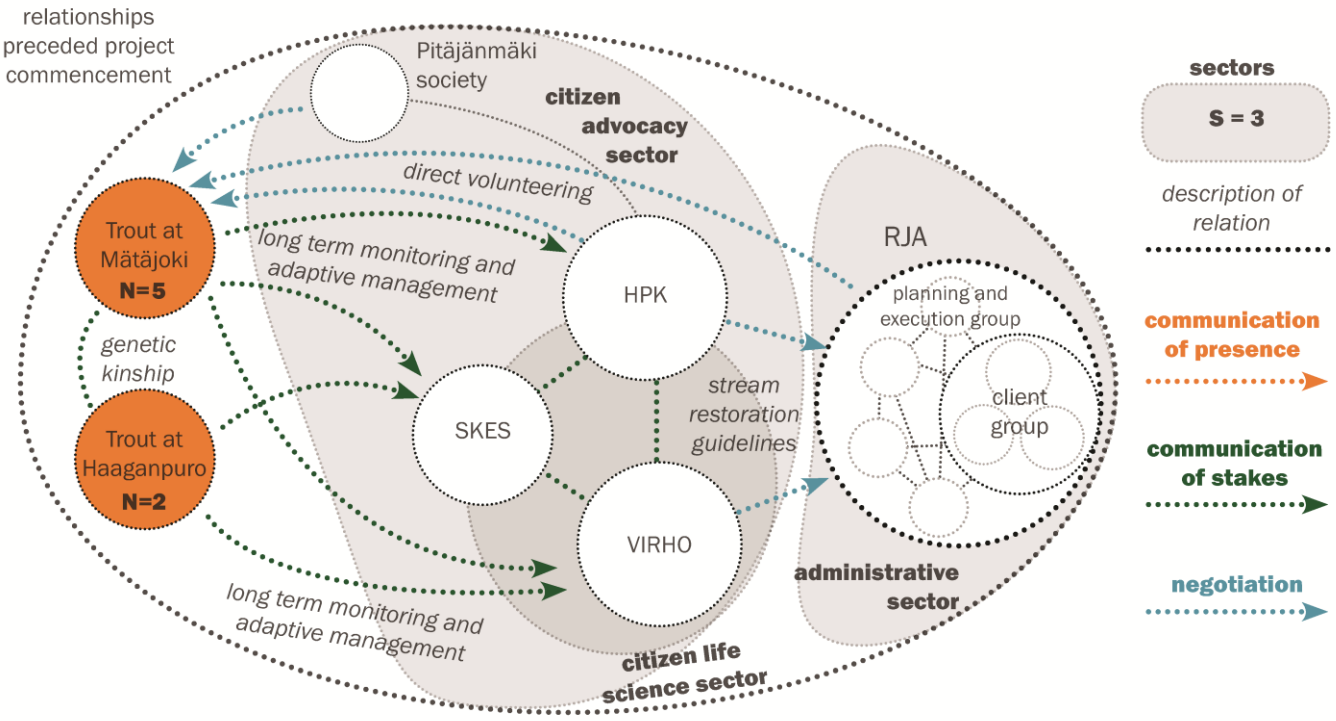


Figure 11. Brown sea trout (*Salmo trutta m. trutta*) as stakeholders

4.5.1 How and when did brown sea trout (*Salmo trutta m. trutta*) become stakeholders?

The brown sea trout does not have any protection status in the EU Habitats Directive. Land-use changes associated with the rail line never necessarily directly imposed a spatial change to existing trout habitat. The trout's achievement of stakeholder status in this planning problem must be explained almost entirely through a diffuse network of sociocultural and political-economic relations that constitute a stewardship culture (Fig. 11). *Salmo trutta m. trutta* can arguably boast the most prominent stewardship culture in the Helsinki region. The effort that Virho, HPK and SKES volunteers, with the support of the City of Helsinki and governmental environmental ministries, have expended in restoring these two streams over the last 20 years represents an investment and socioemotional bond formed over a long period of time between specific humans and specific fish. This is a concretely affectionate relationship and is cemented by the fact that trout return to their birth stream to spawn allowing volunteers to observe the fruit of their efforts as migration intensity increases with each year of successful spawning. In effect, the trout communicate their satisfaction or dissatisfaction with the results of these spatial changes to the stewards by 'voting with their fins'. The sensitivity of spawning success to changes in the flow, temperature, turbidity and oxygen level of the stream has led the relevant organizations and their members to scrutinize any construction activities occurring near the restored creeks (Virtavesien hoitoyhdistys ry, n.d.b.; Pitäjänmäki-seura, 2019; Helsingin Perhokalastajat, 2020a, 2020b). In the past these volunteers have also been able to witness the effects of negligence, a material impact in dead fish washed ashore and low migration volumes (Longinoja, n.d.; Virtavesien hoitoyhdistys ry; n.d.a; Haaganpuro, 2020; Helsingin Perhokalastajat, 2020b), which has translated to their own resolve as stewards. The strong relationships of these humans to these fish were already well known at the time that planning of the Jokeri light rail commenced, thus early efforts to ensure a trout-friendly design were made and the trout stewards were actively enrolled as stakeholders and consultants in the process to speak as representatives about trout stakes (P. Lindblad, personal communication, 29 September, 2020; N. Salojärvi, personal communication, 9 October 2020).

As Virho and HPK members worked closely and amicably with the RJA from a very early stage in the project they also formed social bonds (P. Lindblad, personal communication, 29 September 2020; N. Salojärvi, personal communication, 9 October 2020). RJA explains their contribution of labor and materials to the Mätäjoki as an act of reciprocation for the expertise that Virho and HPK has offered at Haaganpuro and the Mätäjoki bridge crossing (N. Salojärvi, personal communication, 9 October 2020). Maintaining these positive relationships to these stewardship organizations also presumably ensured a favorable image of the Jokeri project among the brown sea trout's passionate and extensive stewardship network (Fig. 12).

5. Comparisons and insights from the case study and literature

This case study has demonstrated the emergence of stakeholder becomings for populations of three species, at four distinct sites. I have outlined how and when these animals became stakeholders relative to the spatial planning and implementation of the Jokeri light rail. In comparing these cases I will expose some common features of what makes the who, why, when and how of animal stakeholdership a unique problem requiring the modification of the conventional stakeholder concept. I will also compare the 'what happened', or outcomes, of these stakeholder cases to extrapolate how different stakeholdership cases may have benefited or harmed the stakeholders in question and helped or hindered the realization of other stakeholders' goals. Together, these insights from the cases will be compared with the ontologies, values and ethics derived from questions i) and ii), to help answer the question **iv) 'how can nonhuman animals become stakeholders more effectively?'**

5.1 Who becomes a stakeholder and why

In the Jokeri case the achievement of animal stakeholdership was exceptional, occurring for only a few animal populations of a few species rather than a comprehensive list of 'all who are affected'. As was argued earlier, values form through relationships, and in the case of the Jokeri's stakeholder animals, value relationships between humans and nonhumans were necessary to trigger the becoming of consequential animal stakeholdership. *Who* becomes a stakeholder is explained through the *why*, a human-nonhuman constellation of values, practices and interests that generate relationships. Figure 12 shows the range of ways these three nonhuman animals in the Jokeri planning problem were valued in terms of the relational value categories from Figure 2.

5.1.1 Conservation status: non-use, intrinsic and bequest values

All the species discussed here have some form of legal conservation status. The EU Habitats Directive protected species listings are created by a network of conservation experts selecting species which are endangered, vulnerable or rare (Cardoso, 2012). The goal of these laws is to prevent biodiversity loss, a goal which Berry et al. (2018) found to be held by almost all EU conservation stakeholders they interviewed. Conservation law, like the EU Habitats Directive, creates cost burdens and administrative complexity for the EU's consistent citizens (Haila et al., 2004; Hiedanpää et al., 2012; Fleurke & Trouwborst, 2014). Were its goals not supported by those

citizens, law makers who represent these citizens would overturn them. Thus, conservation law is at some level underpinned by a societally shared intrinsic valuing in the right of genetic diversity to exist, and a relationship within a social collective that finds conserving biodiversity for future generations (bequest value) to be a common 'good' (Haila et al., 2004; Ban et al., 2013; Berry et al., 2016). Conservation law at its essence also represents a non-use value, a collective decision that to not use a biodiversity resource represents more value than its potential use (Pearce & Moran, 1994; Berry et al., 2016). These relationships, held across large social networks, have come into play in relation to the Jokeri planning case via EU conservation law for all three species.

Conservation law serves as a poor explanation of the values underpinning *individual* relationships between these urban nonhuman animals and urban humans in the Jokeri case study. One reason is that a perception of the goal of conservation law as being merely about the conservation of *species,* means that relationships to individuals are often neglected or thought of as irrelevant (Haila et al., 2004; Hinchliffe et al., 2005). In arguing against the Pajamäki society's opposition to tree felling in Patterimäki park, RJA's project manager suggested that this effort would be better spent conserving a squirrel-inhabited forest 30 km away, not this forest (Toivanen, 2019). If *species* is the only concern, then individuals can become interchangeable regardless of context. As was especially demonstrated in the case of the SFS, human involvements are required to activate and utilize conservation law for positive benefit to the listed animals. It is self-evident that conservation law does not enact or enforce itself nor do animals submit willingly or consistently to ecological inventories (Jokinen et al., 2015). Conscious, caring intermediaries are required (Berry et al, 2013). Caring for other reasons is required. Conservation law does not force people to care. Exploring why people care requires delving into the formation of values in human-nonhuman relationships.

5.1.2 Ecosystem functions, services and economic use values

Brown sea trout's many relationships have generated considerable ecosystem service value, as the subject of recreational fishing, cultural and tourism activity, and direct economic use value as a food fish (Luke, n.d.a; Skes ry, n.d.a; Metsähallitus, 2016). The government of Finland, HPK, Virho and SKES have demonstrated interest in brown sea trout for these economically quantifiable values (Luke, n.d.a, n.d.b; Skes ry, n.d.b; Virtavesien hoitoyhdistys ry, n.d.d; Helsingin Perhokalastajat, 2020b). This has created a set of long-term human-trout relationships instrumental to their stakeholder becoming. Brown sea trout are exceptional in this case of supporting such value relationships. *Unio crassus* like other freshwater mussels are not typically

consumed by humans thus have no direct economic use value (Tucker & Theiling, 1999). They have ecosystem functions in aerating riverbed soils and filtering toxins from freshwater, which, combined with many other biota, form a freshwater provisioning service (Tucker & Theiling, 1999; Syväranta, 2019). Siberian flying squirrels have very limited ecosystem function values (Selonen & Mäkeläinen, 2017). They are prey for owls and hawks, but substitutable in that role with other small mammals and birds (Ibid.). They have a minimum tree seed dispersal function compared with red squirrels (Ibid.). It is highly unlikely that an ecosystem function, service or economic use values are found as causal explanations in human-SFS relationships.

5.1.3 Biophilia and aesthetic values

There is very little written documentation or stakeholder communications which indicate that human-nonhuman relationships in this planning case were formed because of biophilia or aesthetic values. Emotional reactions to videos of squirrel encounters (Pajamäki-seura, n.d., 2019b; Salomeri, 2020) provides some basis to assume that the cute and cuddly appearance of SFS provides a value relationship, but one that is not emphasized much in public discourses which tend to focus on more instrumental, outcome-oriented argumentation (Berry et al., 2018).

5.1.4 Scientific values

All three of these species offer identity formation and employment opportunities for members of the biology and conservation professional community. To comply with conservation law, clients engaged in land-use changes are required to employ consultants to perform species inventories and impact reports (Nieminen & Ahola, 2017). When listed species are found, these consultants become further indispensable as they assist the client in developing a compliance strategy. Marine biologists in consultancies like Alleco Oy have found a professional niche which allows them to explore their own socioemotional, eudaimonic or other values for marine life and get paid to do it. While perhaps cyclical, the monetary investments in conservation law reporting and enforcement itself becomes a value for the conserved species discussed here. They create opportunities to learn more about the animals which may further reinforce and generate value relationships. Due to their exceptional ability to delay and prevent various human land-use objectives, research on Siberian flying squirrels has been highly prioritized and funded throughout Finland (Jokinen et al., 2015; Selonen & Mäkeläinen, 2017). It is estimated that 20% of all of Finland's species protection funding goes to SFS monitoring and conservation law compliance (Jokinen et al., 2015). Enviro Oy

biologists have been extensively employed to document flying squirrel presence in Helsinki, and now perform a city-wide survey updated every year (Lammi & Routasuo, 2018, 2019; ELY-Keskus, 2020). In this case they were also hired on several occasions to perform detailed studies of the Patterimäki site (ELY-Keskus, 2020).

5.1.5 Eudaimonic value and stewardship cultures

I have defined stewardship cultures as a state of dynamic interrelation of values where it becomes impossible to separate the values found in the stewarded entity from the values formed from the acts of stewarding itself, such as social inclusion, cultural identity formation and one's own eudaimonic self-fulfillment (Chan et al., 2016; Bennett et al., 2017). Stewardship cultures can form because at their root some humans have found ways to value a relationship with the target animal. They quickly expand beyond that when humans who take on the role of steward leverage their own interpersonal relationships to enroll more stewards into the network. Eventually the act of stewarding becomes itself symbolic and valued because of these relationships *as well as* the original values of the stewarded organisms (Chan et al., 2016; Bennett et al., 2017). This is nowhere more evident than in the robust stewardship culture formed around brown sea trout, which combines peoples' recreational and cultural ecosystem service relationships with the trout, and an eudaimonic fulfillment found in making place-based ecological improvements and engaging in volunteer social events.

I would advance the argument that Siberian flying squirrels are also part of a rapidly emergent stewardship culture that is as much about the squirrel as it is about other goals and values for forest conservation in urban contexts. Helsy, Pro Luonto and Pajamäki society have created a relationship with squirrels because of their shared goals in urban forest conservation. This has led members of these organizations to act as citizen scientists, directly collecting observations of squirrel feces, learning about their habitat conditions and signs of nesting suitability and reporting them to the authorities (E. Korpelainen, personal communication, 1 October 2020). These activities have become a social activity which also gathers people together based on social and organizational relationships and generates further attachments with the squirrels.

5.1.6 Political pragmatism and umbrella conservation

Values for species-targeted conservation have often been explained for their trickle down or

umbrella effects upon a larger habitat and ecological assemblage (Caro, 2010). In explaining the value of stream restoration for brown sea trout, Virho's promotional materials also claim benefits to other fish, crustaceans, aquatic insects, birds and otters (Virtavesien hoitoyhdistys ry, n.d.c., n.d.d). In this relationship the target species itself is used as a kind of symbol of a broader action for habitat improvement.

Helsy has explained their motivations for SFS conservation at Patterimäki as also an effort to protect birds and a maple grove habitat typology which is rare in Helsinki (Välipirtti et al., 2019). Focusing efforts on SFS became a pragmatic action because it allowed the use of conservation law as a tool. This pragmatism was also pronounced for Pajamäki society whose recreational interests in SFS habitats could be supported by conservation law.

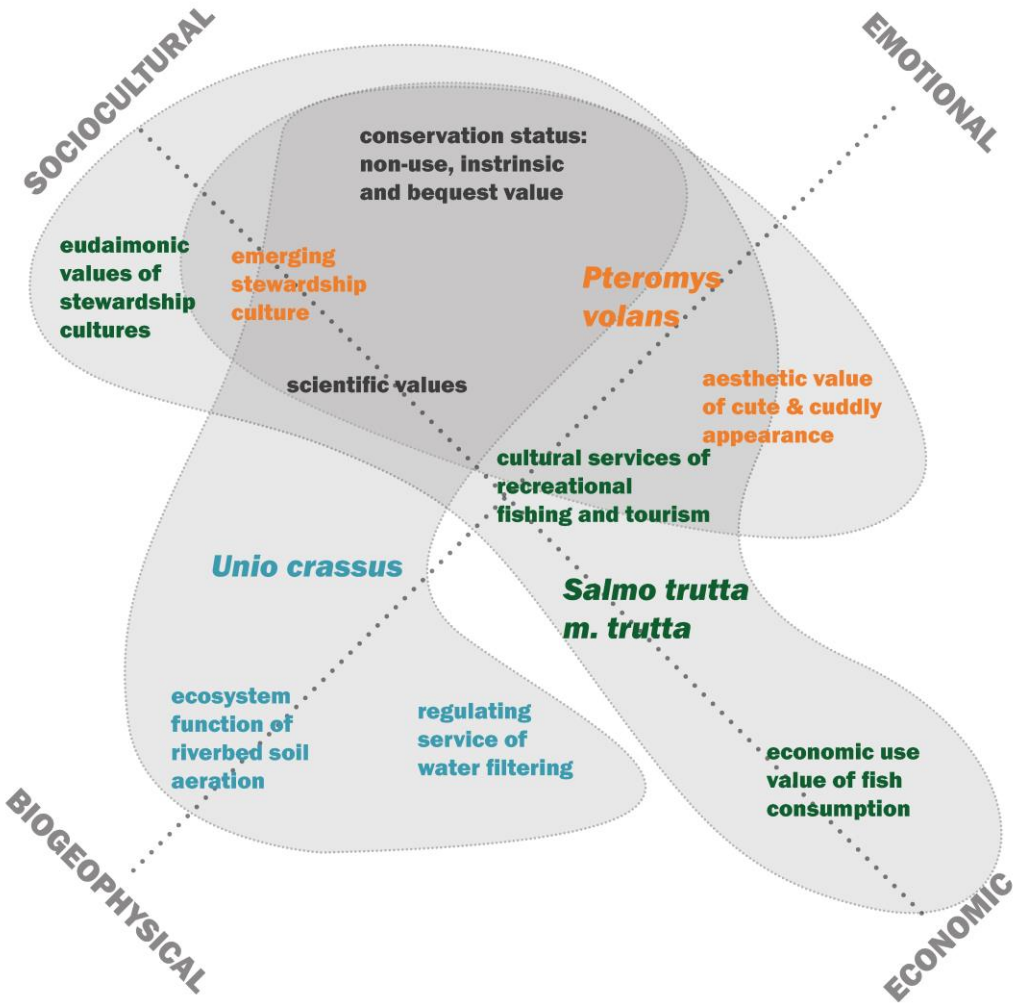


Figure 12. Jokeri light rail animal stakeholder relational value map

5.1.7 Insights in relationships

Animals which became stakeholders in this case study have a few common features shown in figure 12. Conservation status seems to unify them all, but as I have argued, is not enough to induce personal relationships in the decision-making spaces of a planning problem. Only the brown sea trout is widely understood to have an ecosystem service and economic use value, while those of the mussels and squirrels are minimal, poorly understood or latent to this discourse. As a result of conservation law and larger societal efforts at stewardship all three of these animals have generated professional and stewardship relationships. These relationships are the result of overlapping affiliations and relational values for which identifying driving factors or root causes would be a misleading oversimplification. Trying to isolate or quantify the emergent value-making practices of a multispecies urban populace would be problematic. Instead I argue we can understand these emergences as individual and communicative processes, which are brought out and activated by a variety of external forces: conservation law, public financial support, economics, and societal discourses. Human-nonhuman relationship formation in this case is thus an intersection of broad forces with localized and individual human-nonhuman contact in cities. Where the macro and the micro meet and align, a concretely affectionate, value-laden human-nonhuman relationship can emerge.

5.2 How: Stakeholder communications

Values explain why certain relationships form between humans and nonhumans. These relationships are necessary for animals to become stakeholders in spatial planning decision making spaces. These relationships lead to planners, NGOs and other advocates to make considerations about an animal's needs and interests in a planning problem but stakeholdership is about more than just thinking about the presence of animals as additional technical design and planning parameter. It's a communicative relationship within spatial planning's decision-making spaces. If an animal does not communicate nor is not communicated with but exists as an anonymous material entity within the larger monolith of nature, then it has not become a stakeholder. While some nonhuman animals have learned forms of speech in laboratory settings, no wild nonhuman animal yet speaks using the languages of humans (Despret, 2006, 2008). Still all nonhuman animals can communicate something. Through a sociology of translation, I have understood that apparatus and intermediaries are required to translate information from animals to others in a stakeholder network (Callon, 1984). Communication is essential to an animal becoming a stakeholder, as someone needs to know that the animal is there: to establish the issue of

presence or absence (Hinchliffe et al., 2005). Communication is also required to change this relationship into one where the stakes of the stakeholder animal become part of decision-making discourses.

5.2.1 Presence/absence communications

Establishing the issue of presence or absence is the first step in animal communications to become stakeholders, but one that is not free from its own potential for communicative distortions, misrepresentations or contingencies (Hinchliffe et al., 2005). Before an animal can become a stakeholder, others in the decision-making space must be made aware that the animal is 'relevant' to this specific planning problem. Thus animals, whether individual representative members of the species, or the entire population must have a way to communicate that they are 'here'.

Of these three animals, mussels had the most straightforward communicative apparatus for declaring their presence (Fig. 9). When Alleco's biologists visually identified the mussels under the bridge, this was enough to establish that this constituted a mussel breeding habitat (Nieminen & Ahola, 2017). Alleco's communication with the mussels was made possible with some intermediary devices, especially the diving gear which allows them to temporarily occupy the mussel's aquatic world (Syväranta, 2019). Alleco also did not communicate with every mussel to establish presence but estimated overall mussel population based on counts performed at regular transects (Ibid.). It was not until much later when the mussels were relocated that most mussels were directly identified and counted, one by one (Ibid.). Thus, in the early dives, a few mussels acted as representatives for the entire population, saying 'I am here' and allowing the well-founded assumption that 'I am not alone.'

Siberian flying squirrels are an apt case study in difficulties of establishing presence/absence as a static issue among dynamic and enigmatic species. Feces are the primary apparatus by which SFS communicate their presence to humans (Fig. 10). As this case demonstrated, this is not always a straightforward and reliable medium of communication. Squirrel feces get buried, decompose or wash away in snow melt and can only be validly surveyed in spring (Nieminen & Ahola, 2017). Fecal surveys also require a high level of survey resolution and labor. Squirrel feces might not be found unless one is specifically looking for them (Jokinen, 2015). Effort matters. Squirrel feces provide very little information other than at least one squirrel's declaration that they were 'here' (Nieminen & Ahola, 2017). It can not necessarily be used to translate information about whether a squirrel is nesting here, will remain here, or prefers to be here over other possible trees

and forests (Ibid.). This information must be derived from deeper communications about the wants and interests of the organism (see section 5.2.2). Lack of this information led to instability in the discourse as the Helsy/Pajamäki alliance had a different interpretation of SFS feces data than Enviro Oy and RJA.

Communication of presence/absence is not necessarily relevant to the trout's stakeholder becomings. They were included in decision-making about Haaganpuro's upper reaches, even though Haaganpuro's stewardship website currently indicates they do not spawn this far upstream (Haaganpuro, n.d.). Since trout were originally (re)introduced to both Haaganpuro and Mätäjoki by human stewards, absence might prompt more actions on their behalf than presence. Declines in visual counts of spawning fish and reports of dead fish have led to investigations of potential causes and mitigating actions (Longinoja, n.d.; Virtavesien hoitoyhdistys ry; n.d.a; Haaganpuro, 2020; Helsingin Perhokalastajat, 2020b). Since the trout's stewardship culture is premised on the *potential* for more trout to exist in the future, their current presence is not critical to stakeholder status (Fig. 11).

5.2.2 Stakes communications

Once an animal has become a stakeholder it has become capable of transmitting information to other members of the stakeholder network relative to a planning problem. This capacity is no guarantee of success. Communication is required for an animal's stakes, that is their needs and interests relative to the outcome of a planning problem, to be translated into a change in spatial plans. Stakeholdership implies direct communications, but in this case, beyond the communication of presence/absence, many indirect and proxy communications with organisms in other times and places entered the decision-making process. This stems from a widespread view that nonhuman animals can be approached as politically objective, having a fixed identity, behavior and set of needs attached to a taxonomic designation (Despret 2004; Hinchliffe et al., 2005; Metzger, 2014a).

After *Unio crassus* mussels were identified as being present at the Vantaanjoki bridge site, they had become stakeholders (Fig. 9). However, the assumption that translocation would be successful was never verified with this specific population of mussels. Speaking for the mussels and their implicit consent to this translocation was based on the success demonstrated in previous translocations of the taxa elsewhere. At Vantaanjoki these *Unio crassus's* stakes communication came from scientists who had studied *Unio crassus* as a general and interchangeable category of organisms. Only Alleco Oy's follow-up surveys on the success of mussel relocations will allow

these specific mussels to communicate a response that will confirm if the translocation aligned well or poorly with their needs and interests for surviving and thriving.

It's not objectively clear that the construction of the Jokeri would directly cause the death of any Siberian flying squirrel, nor that it would necessarily remove a habitat area (north of the rail line) from future usability if SFS can continue to glide over the 20 m rail corridor gap. Many assumptions about the impacts of development on SFS's living success are made based on quantitative data collected from SFS survival rates in commercial forestry operations (Jokinen et al., 2015; Selonen & Mäkeläinen, 2017). While in current conservation practice it is conventionally assumed that a minimum forest patch and corridors of movement can be left intact and SFS will survive, Jokinen et al. (2015) estimated that 50% of squirrels were found to have abandoned these 'conserved' patches. Furthermore, very few studies about SFS movements and behaviors in urban areas have been performed (Selonen & Mäkeläinen, 2017). Communications with the specific squirrels at Patterimäki have been limited to feces identification, and a few direct observations captured on video. Very few communications have occurred which interrogate what the response of these squirrels to the Jokeri's construction would actually be. This has exposed the decision-making discourse to instability, as currently, both sides of the argument can use their values and beliefs to defend their representations as to what the squirrels stakes truly are. Quantitative data can be found which supports the deviation permit and RJA's tacit assumption that the SFS will not be significantly affected (ELY-keskus, 2020). Pajamäki society and ProLuonto have submitted counter claims which alleges the Jokeri will create a poor conservation status for the SFS (Pajamäki-seura, 2020). The reliability of speaking *for* and not *with* the squirrels as stakeholders is thus drawn into question. I argue that the deadlock in deliberations about Patterimäki hill, which have gone on for nearly two years, are based on a positivist ontology of animals as technical issues which can be objectively managed and the lack of a communicative mechanisms to truly define 'what the squirrels want'. Both arguments that the Jokeri would or would not constitute degradation of SFS habitat could be defended through certain interpretations of the available information. A common-sense assumption that squirrels are passive objects in these deliberations, rather than potential stakeholders in communicative relationship to them, hinders the development of deeper interpretations and negotiations.

The trout have had a highly successful form of stakes communication with their stewardship network over the last 20 years. When a trout comes to a stream to spawn, it is highly likely that that trout was itself spawned in that stream, thus constituting a confirmation that what the stewards are doing aligns with what the trout 'wants'. I have called this 'voting with their fins'. However, these stakes communications are not the result of speaking to a group of fish in a direct verbal way but

based on generations of data on what works and what does not work for the living success of these fish at these streams (Fig. 11). Thus, time becomes a very significant component of how stakes communications unravel which demands additional focus in this analysis.

5.3 When: Temporal issues - when relationships form, when communications happen

Stakeholder networks and their constitutive relationships are not static, stable entities, but rather "knots-in-motion" (Haraway 2003, p. 6). Changes in relationships and the formation of entirely new relationships occur parallel to and interwoven with the decision-making process itself. Adopting Tryggestad et al.'s (2013) non-linear project temporalities means leaving the conceptual frame of the decision-making space always permeable to new stakeholder becomings. Animal populations, environmental change and the spatial effects of a planning project remain under constant revision, suggesting that new stakeholder becomings must always remain possible. When relationships form and when communications happen is important to explaining what impact they have upon the decision-making process and the potential for positive outcomes.

Much of the success of the brown sea trout at Mätäjoki and Haaganpuro stems from a long-term network of relationships within a stewardship culture. Stewardship cultures and other deep relational networks must precede the start of a planning problem by many years if not decades in order to lead to actions as consequential as those witnessed for trout. By the time a project is already in motion, a present set of investments and criteria for judging the success of a project will already have been formed. Because the trout of Mätäjoki and Haaganpuro streams became stakeholders at a very early stage of the project, their needs could be addressed parallel to the other goals of the project without disrupting those goals.

Human-trout communications at these streams have happened slowly and over a long time period. Stewards have had limited resources to make larger scale stream restorations all at once, so they have often happened in a piecemeal fashion. This has allowed the stewardship network to observe trout responses to changes and adapt and refine methodologies as a result. In effect, this multi-generational communicative relationship has permitted humans to ask trout something about what they want and what they do not want. The example of the trout exists to show how adaptive monitoring of a population, based on the desire to measure the efficacy of past stewardship activities, leads to an easy and well-founded assumptions about how trout should react to future interventions along these streams. The knowledge produced involves *these* trout populations in *these* specific places. It is made possible because the entities making spatial changes to the

streams and the entities monitoring population responses are working in tandem or are often the very same people.

The squirrels at Patterimäki had not become stakeholders at such an early stage in Jokeri's planning due to their recent and fast territorial expansions. Stakeholders simply were not aware of their presence until after significant implementation steps had already been taken. The alliance formed by Pajamäki society, Helsy and SFS at Patterimäki formed relatively late in project planning. It was new and relatively superficial compared to the extensive and deep relations of the urban brown sea trout. This lack of relation until well into project development was to the detriment of all stakeholders, as there remained very little room left to negotiate the stakes of the squirrels with the immense inertia of the plans in motion and work already completed to either side of Patterimäki. Delays and additional costs continue to accumulate without resulting in any change of outcomes.

Mussels were part of project planning from an early stage as presence was assumed even before a survey had been performed. However, no communications happened during the planning process to determine the stakes of these mussels. It will take two years of follow up surveying by Alleco Oy's marine biologists to determine if the translocation of mussels was a success. It is only in this follow-up that mussels will be able to communicate if the translocation aligned with their needs and interests. A longer-term relationship has formed between the mussels, Alleco Oy and the rest of the Jokeri stakeholder network but has only formed *after* spatial actions were taken. This information may do little to affect change for these mussels in this planning problem but could be helpful to decision-making about future mussels. The information produced is out of temporal pace with the planning problem in motion.

These cases demonstrate that planning must come to terms with three very different overlapping time scales of information flows within human-nonhuman communicative relationships: The slow time scale of accumulated research of academic/professional life science networks, the medium time scale of generational change in animal populations, and the often much faster time scale of environmental and spatial changes in urban development (Gavin et al., 2016). Booher and Innes (2002) state that the misalignment of time scales creates a difficulty in establishing "shared contexts" that is common knowledge held by larger networks in a quasi-stable relation. Some knowledge becomes destabilized as the ability to "interpret rapidly changing phenomenon or act effectively in a radical changing environment" misaligns with the rate of relevant information flows (Booher & Innes 2002, p. 224). Communicative instabilities and distortions in planning emerge when a change happens faster than information about that change (Ibid.).

5.4 Outcomes

The Jokeri's planning process shows promising tendencies in the emergencies of animal stakeholder subjectivities. These three animals can be said to have achieved something exceptional, as a variety of stakeholders were willing to engage in a discussion of what they might want, need and deserve relative to this project. However, stakeholdership is no guarantee of optimal or even positive outcomes for the stakeholders involved, human or nonhuman.

For *Unio crassus* mussels, an 80% survival rate from translocation has been estimated by studies in Poland (Zając et al., 2019), but the applicability of that data to the mussels at Vantaanjoki has not been confirmed. Alleco Oy's follow up survey results will be critical to measuring the outcomes of mussel stakeholdership. For brown sea trout throughout Helsinki, stakeholdership has led to planned improvement of future living conditions, a form of opportunistic conservation in which their potential territory has been expanded. The outcomes of the squirrel's stakeholdership in the Patterimäki case is still unknown. If the most recent deviation permit stands, some minor mitigation measures will be pursued (ELY-keskus, 2020)

I have argued that stakeholders cannot be hand-picked by ‘‘the authority in charge" but they must be allowed to become in relation to other stakeholders. As was evidenced by the case study research, animals who merely appeared as line-items on environmental impact reports never achieved a consequential and value-laden discourse in decision-making spaces. It was only those who have relationships with other stakeholders, born out of the formation and defense of varied relational values, that achieved such power. I have defined power as a property of networks, "a jointly held resource enabling networked agencies or individuals to accomplish things they could not otherwise" (Booher and Innes 2002, p. 225). Network power connects the geometric properties of a stakeholder network to the relative outcomes of decision-making processes for a stakeholder.

Brown sea trout clearly have the most 'powerful' stakeholder network, with a N value of five at Mätäjoki and an S value of three (Fig. 11). This translated both to early and decisive actions on their behalf, and actions which expanded their potential habitat, rather than merely defended an existing one. The fact that professional science and citizen advocacy sectors work in tandem through a long-term and deeply connected stewardship culture is also of benefit.

Siberian flying squirrels at Patterimäki had a N value of three, with direct relationships formed to members of three distinct sectors and an overall decision-making space encompassing four sectors (Fig. 10). They have also had a high amount of network power which has so far been

enough to stop construction activities for two years and induce extensive public deliberation. The fact that these discussions span a wide range of societal and professional sectors has made their deliberations very complex and allowed for redundant pathways by which different stakeholders' goals could be pursued. For example, when the initial relationship with Enviro Oy did not produce a consequential outcome for SFS, the formation of a relationship with Helsy was critical to the continuation of SFS negotiations in the decision-making space. Now that Helsy's appeals have been resolved in courts, the remaining relationship with Pajamäki society means that the conversation will endure through new complaints filed. Whether this multi-sector engagement has been to the advantage of the project as a whole is arguable, but objectively it has meant that the SFS of Patterimäki have gone two years almost completely undisturbed.

The mussels have the weakest network, with only one direct relationship (N=1) formed to members of Alleco Oy's consultancy (Fig. 9). This resulted in an outcome in which external assumptions about mussel stakes were not contested in public discourse. The mussel's network demonstrates a more straightforward manifestation of conservation planning as a one-way flow of information from animal, to scientist, to decision makers, with very little dialogic feedback between them.

Within the context of this specific case study, increased network power correlates with outcomes seemingly more favorable to the organisms in question. However, what outcome is 'more' or 'less' favorable to the animals must be viewed skeptically due to lack of communication with the animals themselves. No outcomes can be materially observed yet as the Jokeri rail remains under construction.

6. Conclusions

I have argued that urban spatial planning is a cooperative mechanism in ethics which seeks to regulate how land is used, modified and arranged in order to sustain quasi-stable coexistences of dense populations with varied needs and values. A dangerous tendency in planning is to assume technological mastery over the various livings and ways of knowing that are part of an urban landscape configuration (Hinchliffe et al., 2005; Meissner, 2014). A status quo planning system wherein animals do not regularly become stakeholders can depoliticize the very hard decisions of life and death that must be made in the spatial futures of our cities (Metzger, 2016a). All too easily it can seem to be a simple matter of tallying the votes for or against or doing a cost benefit analysis of ecosystem services lost versus social or economic benefits gained (ibid). The animal-as-stakeholder concept is a suggestion that by listening to counternarratives originating from animals

themselves, we can temper this technocratic authority with the love, respect, or interest which many humans already hold for nonhuman life to appropriately define the outcomes of decision-making processes. As Hinchliffe et al. (2005) state, this requires an "ability to listen attentively is a way or means of putting knowledge at risk and allowing others, of all shapes and sizes, to make a difference to the process of knowing" (p. 653).

The risk of this, as with any relational theory of governance is that by questioning the centrality and rights-to-knowledge of expert authority, I am also removing the ability to find any one actor or organization at 'fault'. Nor can I even suggest there is a 'fault' to be found in the conventional sense. What happens is merely the outcome of a process which must be treated as authentic to the wants and interests of that processes' participants, barring any evidence of malfeasance or communicative distortions. My goal has not been to interrogate the relative 'good' or 'bad' of outcomes, but to chart the ways in which these outcomes are derived from the emergence of animal stakeholder subjectivity through a web of relations. Because these specific animals were able to achieve stakeholder status, they will have some spatial outcome better than a state of non-relation. They've achieved power through networks, however limited in their relations. A state of near complete non-relation is still the norm for most animals, who did not feature at all, or quite so prominently in this decision-making space.

As long as spatial planning processes remain largely anthroponormative, outcomes may continue to be driven by the optimization of technologica and economic human systems and eclipse the more complex web of relationships between human and nonhuman life upon which these systems are ultimately based (Starik, 1995; Meissner, 2014). Thus having argued that animals *should* be conceived of as stakeholders, and looking at some of the systemic relational mechanisms by which they *become* stakeholders, I move into a conclusive discussion of how nonhuman animal stakeholdership can be more readily, effectively, and consequentially achieved by affirmatively interfering with this system.

6.1 A model of animals-as-stakeholders

While the ambitions of communicative and participatory planning theories may be to give political legitimacy to those who are conventionally not legitimized (Metzger, 2013; Sager, 2018), my 'becoming' ontological perspective is that deciding upon matters of stakeholder legitimacy does not belong to any one planning actor, and thus cannot be 'given'. This is not to remove accountability for actions but the nuance here is to rationalize where the leverage and power of professional

planners and conservation stakeholders in nonhuman animal stakeholder systems exists. These actors are but one of many stakeholders in decision-making spaces and ones which increasingly lack a central authority to dictate spatial outcomes (Booher & Innes, 2002). They must operate within, but not in mastery over, a decision-making space (Ibid.). I have used concepts from actor network theory, the sociology of translation and general network theory to graphically and rhetorically represent these in my case study (Figs. 9,10,11). From observing basic and common features of these cases I extrapolate the processes of nonhuman animal stakeholdership into three common phases: Relation, Communication and Negotiation (Fig. 13). I here discuss how they are observed to vary with specificity to urban nonhuman animal differences and abilities in communicative and political processes.

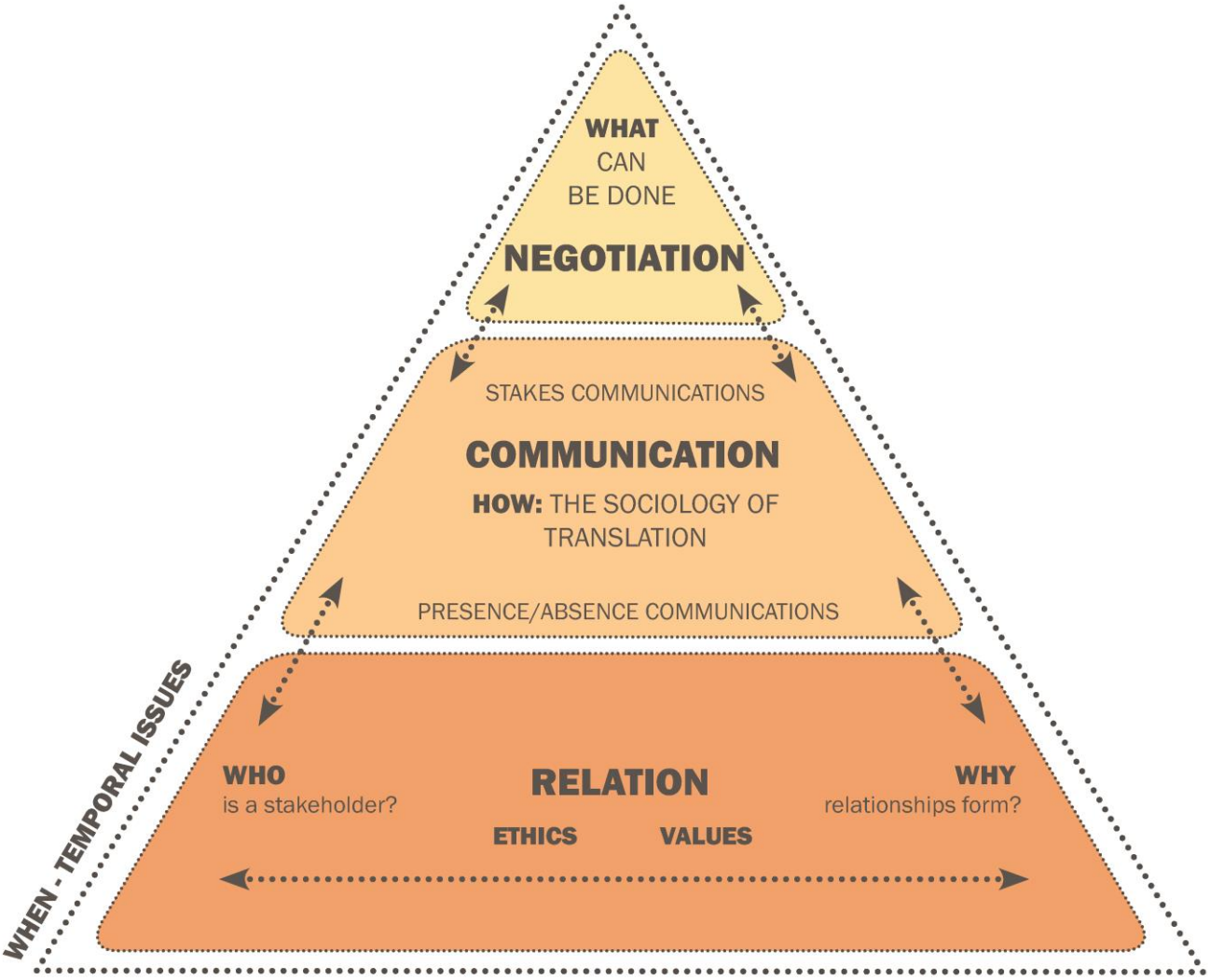


Figure 13. Concept model of animals-as-stakeholders

1) *Relation*

Relation is the process of forming a relationship to another stakeholder and being enrolled into the web of stakeholders encapsulated in the decision-making space. Relation is the moment of passing from unrelated to related or from object to subject. Relationships are not static and can form and disband overtime. For nonhuman animals value relationships become activated by both localized, individual means of valuing and larger structural forces like conservation law. Human-nonhuman relationships are the result of complex and interwoven valuing processes. In cities they become ever more complex as human and nonhumans come into frequent dense contact and actions of valuing are equally explained as part of urban social networks of high density and complexity.

Professional planners can work to strengthen animal stakeholder networks through establishing, supporting and fostering long-term human-nonhuman relationships in their communities. In the model of decision-making spaces this means more connections (N value), but also a variety of connections that ideally combine the interests and values of multiple social and professional sectors (S value). This creates a kind of conceptual redundancy in which nonhuman-animal communications may occur, a redundancy that was exemplified by the trout and Siberian flying squirrels in the case study who were valued and communicated with overlapping networks of individuals from varying professional and societal sectors. For SFS, this redundancy was critical because when one possible pathway of appealing the light rail's development was removed it allowed another possible response. Had SFS only relied on their relationships with professional scientists this issue would have likely closed in 2018. Instead those who held valued relations with SFS were able to leverage an alternative relationship with informal and third sector science and community stakeholders. This kind of 'response diversity' boosted the presence of SFS in decision-making discourses beyond that of a cut-and-dry technical matter.

2) *Communication*

Communication is the process of sharing information between related stakeholders. All communications happen by translation from node to node in the stakeholder network. Communicative methods for nonhuman animals are specifically related to scientific knowledge production. This scientific knowledge production can happen through a combination of formal, academic, informal and hybrid organizational activities. The most authentic and consequential communications are those that happen with specific, situated populations of an animal over the

long term. Given the unique dearth of information about animals in cities that spatial planning is provided, and the behavioral elasticities and site-specific contingencies especially inherent to any urban ecological knowledge gathering, this kind of localized and population level knowledge is preferable to generalized, global assumptions at the species level (Hinchliffe et al., 2005). Thinking of the animal as a communicative stakeholder means having to question the interchangeability and generalizability of knowledge gained from animals (Essen & Allen, 2017). It means confronting the possibility that animals are not mere automata performing according to a preordained instinctual or genetic script but may indeed have an individuality at the level and variety which planning has hereto only granted to humans (Hinchliffe et al., 2005; Despret, 2006; Essen & Allen, 2017). As more empirical methods are developed in urban ecology there is a potential to better integrate them into urban planning decision-making frameworks *through* the stakeholder concept to activate and engage nonhuman animal stakeholders and to make stakeholder communications more cognizant of their own individual subjectivities.

3) *Negotiation*

Booher and Innes (2002) describe negotiations between stakeholders as the process of "creating new options that were not available to them individually or when they were in a conflict mode with others" (p. 225). Negotiation requires a dialogic communicative link meaning not only that animal-stakeholdership presents a communicative challenge of animals sharing information with humans, but also of humans communicating something *back.* Ideally, such a relationship would involve many members of the stakeholder network having more information than if they were in communicative isolation, such that they may be prompted to *change* their interests relative to the interests of another (Booher & Innes, 2002). This two-way communication is trackless territory and far outside the observations made in the case study. Human-nonhuman negotiations present a challenging frontier in research with animals-as-stakeholders.

However negotiation shall be the ultimate goal of the animal-as-stakeholder concept, because it means that decision-making groups don't see nonhuman interests as simply something which requires they make sacrifices to accommodate, but which can be collectively positioned in a point of 'good-enough' balance with other needs and interests (Tsing, 2015). Negotiation is thus the difficult process of balancing self-care with care of others (Clowney, 2013). In collectives many related pairs are performing this negotiation at the same time. The concept of negotiation returns this discussion to the imperatives of Leopold (1949/1987) and Haraway's (2016) ethical constructs for multispecies socioecological symbiosis which recognize that a successful community is one

that achieves this long-term balance point. Identifying this balance point is something that can only be performed collectively and dialogically with respect to each very specific decision (Clowney, 2013). If this balance point is identified in absence of nonhuman animal voices it will likely skew very much toward towards needs and interests of a purely economic or instrumental value systems which does an injustice to the range relational values shown in Fig. 2.

As a form of socioecological symbiosis, negotiation ensures that urban spatial planning is not necessarily the advancement of a purely human interest through the diminution of nonhuman interest. Instead, it presents the possibility that by establishing concrete communicative links with nonhuman animals, humans and nonhumans can know enough about each other to create planning outcomes of mutual benefit. The animal-as-stakeholder is a potential mechanism to "evolve" ethical "modes of co-operation" or perform the "making kin" needed to establish widespread socioecological symbiosis in procedural and substantive spatial planning content.

These three processes are helpfully shown as a stacked pyramid, indicating that each higher process is dependent on the success and outcomes of the lower processes (Fig. 13). Without fostering relationships and becoming related to a planning problem, a stakeholder will not be capable of communicating information about that planning problem. Without communicating information about a planning problem, a stakeholder cannot negotiate for a better or more stable position in the outcomes of that problem.

Planners are not in 'control' of relation, communication or negotiation. They are but individual nodes in larger relational stakeholder networks. All three processes, relation, communication and negotiation are mutually affective processes brought about in the relationships of stakeholders. While professional spatial and conservation planners may not be able to simply list out all the 'legitimate' animal stakeholders present and make it so, they can have a role to defend nonhuman animal ethics and values in their decision-making spaces. This requires that at least some planners adopt a non-anthroponormative view of the stakeholder concept, even if others in the network do not share the view. Planners can be party to the formation and strengthening of human-nonhuman relationships and stakeholder network power, as well as facilitators of communicative translations and negotiation processes within stakeholder networks. This requires taking responsibility for the asymmetries in communicative power and political-economic capital that nonhuman animal stakeholders have. Something affirmative is required to counteract this asymmetry and achieve better, more just and more ethical quasi-stable multi-species coexistence in urban placemaking. Given some of the fundamental things that make nonhumans animals, *different*, as stakeholders extrapolated from this research, I advance the following hypotheses in answer to the question **iv)**

'how can nonhuman animals become stakeholders more effectively?' These are presented as hypotheses, not solutions, in order to acknowledge that this case study, limited to one city and one planning problem is not enough upon which to construct universal conclusions. This demands a research agenda of more diverse and methodologically comprehensive studies to construct an academic community of, for and about animals-as-stakeholders.

6.2 Hypotheses for future research

Hypothesis 1) Nonhuman animal stakeholders with greater network power achieve 'better' spatial planning outcomes. I have drawn the tentative conclusion that in this case animals with greater network power achieved or are likely to achieve better outcomes from spatial plans. I see the potential to test this hypothesis with quantitative measures of network power compared against changes in measures of an animal population's success following planning interventions. Analyzing the association of these two measures in a number of cases could then lead to more definitive conclusions about potential correlations between network power and the long-term success of animal stakeholdership.

Hypothesis 2) Nonhuman animal stakeholders with multi-sector relationships achieve 'better' spatial planning outcomes. It may be helpful to understand whether it is simply enough for an animal-as-stakeholder to have a large and robust network, or if the *complexity* of that network relates significantly to outcomes. I have proposed in the case that the multi-sector relationships of the Siberian flying squirrel (S value), not just the size of their network was a potential boost to their network power by creating redundancies. This conclusion should be tested among more and diverse animal stakeholders. Would formal institutional relationships guided by animals-as-stakeholders be enough to result in consistently positive stakeholder outcomes or do animals also need to form relationships with a multitude of societal sectors to ensure success?

Hypothesis 3) The formation of human-nonhuman relationships prior to the start of a planning process streamlines and stabilizes decision-making. I have proposed that the brown sea trout's formation of a stewardship culture decades prior to the start of Jokeri's spatial planning was critical to the efficacy of communication in decision-making spaces. The opposite possibility was demonstrated in the sudden emergences of SFS stakeholdership in late phases of the project which destabilized rather than supported project goals. I propose that the relationships between the timing of relationship formation and the ultimate outcomes of animal stakeholdership should be further empirically tested.

Hypothesis 4) Effective communication of nonhuman animal stakes can be supported by long term communicative relationships. I have noted the problematic temporal misalignments of multi-generation data gathering of animal populations with fast-paced planning projects. These issues in themselves justify municipalities and other institutions to bolster support for the long-term research activities of urban ecologists, life scientists and citizen scientists. How these activities will contribute to the success of nonhuman animal stakeholder communications should be empirically tested. Projects like SquirrelLIFE, which track the movements and habitat preferences of urban Siberian flying squirrels in Espoo, may be promising examples of long-term efforts to better communicate with animals in support of decision-making processes (City of Espoo, n.d.b).

Hypothesis 5) Thinking of animals as stakeholders will change the nature of ecological knowledge production and planning in urban settings. I have suggested a problematic tendency of planning practices to approach animal information as interchangeable and generalizable at a taxonomic level rather than recognize site-contingent factors, behavioral elasticities and the possibility of individuality among members of a taxa. Approaching human-nonhuman knowledge coproduction as an issue of stakeholder communication can help cognitively shift urban animal knowledge production to a practice of communicative interrogations of individual animal wants and needs relative to the unique spatial and social variables of urban settings.

Hypothesis 6) Human and nonhuman animal communicative time scales can be brought into closer alignment through adaptive and experimental communications. I have suggested that long-term communicative relationships are needed to help bring the slow information production of human-nonhuman animal relationships into the fast-paced processes of spatial planning. Others like Felson and Pickett (2005), Hinchliffe et al. (2005) and Despret (2006) have also suggested means and apparatus of speeding up nonhuman communication to experimentally communicate with animals in tandem with proposed spatial changes. This may mean adaptive measures, such as executing small parts of a project and measuring its impacts on biota before executing full measures. Experimental communications can also mean placing experimental variables relevant to a project in the nonhuman animal's habitat and observing their preferences toward those variables. Building such "designed experiments" into the planning process does take time, but may shorten the long-term and multi-site research needed to draw broad conclusions by testing only the specific conditions and specific populations which are actually involved in the planning problem (Felson & Pickett, 2005). The more these are performed the more future practices can be honed and specified to gather the relevant information faster.

Hypothesis 7) Animals can be negotiated with and asked to change their stakes relative to a spatial planning problem. Getting animals to communicate something to humans is a technical and conceptual challenge. Communicating something back is even more unprecedented. How this could happen is something that should be explored through further case study research and looking at how human-animal communication experiments in laboratory settings may be extrapolated to urban planning scenarios. How can professional planning and other institutions cause or persuade an animal stakeholder's interests to change in order to negotiate with other stakeholders? As Despret (2015) writes, "making peace with animals who are quite clearly not ready to make any concessions requires a bit of courage and imagination." (p. 108).

Hypothesis 8) Adopting the animal-as-stakeholder concept can lead to more creative negotiated spatial and design solutions for human-nonhuman animal coexistence. Tsing (2015) coined the term 'good-enough worlds' to describe an imperfect, always under revision point of quasi-stable coexistence in a multi-species assemblage. What kind of 'good-enough worlds' can we achieve when planning stakeholders start to not only ask urban animals what they want relative to a spatial planning project but tell them what they'd like in return. How much more elaborate will negotiations become when there are 20 or more species and many different collective and individual opinions and alignments within them? I can only speculate that this would produce a truly novel approach to the way cities are designed and planned. Making these experiments in cohabitation a goal, is likely to prompt inventiveness not yet produced by urban planning and design systems preferencing the optimization of technical and economic functions (Despret, 2015).

Hypothesis 9) Networked understandings of stakeholdership lead to quasi-stable coexistences between many stakeholders. What does it mean if one stakeholder adopts the animal-as-stakeholder framework in their work? What would it mean if an entire planning network had come to a common understanding that they would practice their work with a conceptualization of animals as stakeholders? I hypothesize that this would streamline planning process and allow better goal alignment between many stakeholders from many taxonomic groups. Engaged action research which actually works with entire stakeholder networks to develop better practices of animal stakeholder communications would need to be tested in order to measure the impacts of implementing this conceptual framework in professional practice. Cognitive dissonances with paradigmatically 'common-sense' human-animal binaries and the inertia of familiar institutional structuration are likely to introduce new problems to this practice.

6.3 Risks and uncertainties

"What helps us make good decisions is not having perfect knowledge but acknowledging that we do not have it." - Marina Alberti 2016, p. 181

Assisting in human-nonhuman relationship formation can be thought of as an important role of professional planning, but one that could also be potentially problematic to current managerial and technical practices of planning, as these relationships could then stand in opposition to the instrumental goals of the conventional planning authority. Herein lies a paradox that is not unique to nonhuman animal stakeholder engagement, but one which is currently widespread in all participatory practices: To invite others with varying knowledges-making practices and perspectives to gain legitimacy in deliberative processes means to threaten the technical objectivity and political-economic rationality upon which many planning decisions are based (Meissner, 2014; Metzger, 2016a). It means to put that knowledge "at risk." (Hinchliffe, et al., 2005, p. 653). It questions the illusions of best evidence and best practices that planners and designers must create to move their projects forward, despite widespread scientific recognition in the inherent incompleteness of this knowledge, especially on emergent matters of urban ecosystems (Alberti, 2016). Rather than erase that risk and make way for a utopian, and conflict free future, I am suggesting a methodology for multispecies planning that is likely to bring about even more conflict. I also argue that there is no option to ignore or walk away from animal stakeholder subjectivities. They already exist and will continue to become in relationship to the humans that form valued relationships with them. Adopting the conceptual framing of animals-as-stakeholders has the potential to bring this reality into better alignment with the temporal and procedural difficulties of spatial planning. However, to do so in a way that is ethical, just, and a good use of public time and resources is a matter requiring extensive research and experimentation.

Glaring risks remain in that no matter how hard individual humans try, communicative relationships with nonhumans will always be colored by an acute asymmetry in communicative powers (Despret, 2008). Knowledge production about animals is part of social, political and economic processes that can remain vulnerable to appropriation by existing political-economic power holders. If what an animal 'wants' can still be spoken of and by human intermediaries, communicative authenticity is always in question. Placing such information into networked decision-making spaces with stakeholders of varying professional, organizational and spatial alignments is one way of ensuring that no information gets to exist outside of the deliberative interrogations of political subjectivity (Callon, 1984; Latour, 2004). This does not eliminate the existence of empirical facts but makes sure that the mythology of fact isn't merely used to reinforce status-quo structural oppression

(Latour, 2004; Essen & Allen, 2017). This restores science in decision-making to the matter of continuous open debate that becomes especially relevant when it has material consequences for the spatial futures of cities (Latour, 2004; Essen & Allen, 2017). The spaces of this debate must be aware of and do their best to disempower attempts at animal-voice appropriation, misinformation and distortions (Essen & Allen, 2017; Sager, 2018).

6.4 Conclusion

Nonhuman animals have long been absent from narratives of urban subjectivity and agency and thus their positioning in the planning of urban spatial futures is normatively an abstraction or external entity tied up in ontologically untenable human-animal and urban-rural binaries. Using the conceptual references of socioecological hybridity, actor network theory and a sociology of translation, I have suggested a way to narratively reposition nonhuman animals in planning processes. This method depends on extending communicative planning theory's conventional concept of the stakeholder to a multispecies community of urban residents. This has been demonstrated through a case study analysis which also reveals the major challenges and uniquely 'animal' problems of stakeholder subjectivity. Jokeri's spatial planning was not approached with an animal-as-stakeholder concept in mind, but I argue that animals still *became* stakeholders in emergent ways activated by their value relationships with humans. Understanding that this process is emergent, diffuse and networked gives greater understanding to how professional planning and conservation planning can act affirmatively towards more ethical and just animal-stakeholdership in the future. This requires not a universal and overoptimistic paradigm shift but working to suggest alternatives within existing socio-technical systems of planning. While it is impossible to enroll all animals as stakeholders deliberately and in advance of project work, they are currently offered very few communicative means in which to *become* stakeholders. I believe this is an injustice that can be addressed without making any false promise of utopian, death-free, conflict free planning. Instead this brings animals into the space of deliberation, agonism (and sometimes antagonism) that represent spatial planning processes so that they have a more communicative and direct relationship to those processes and all their complex tradeoffs between open fields of both divergent and shared needs and interests. This means that urban development is not a bipolar battle of human progress against natural conservation, but a multivariable symbiotic practice to reach 'good enough' outcomes for a multitude of organisms. Optimization of any one value, one species, or one system cannot be the goal. Instead the aim of creating socioecological symbiosis requires an uneasy, deliberative, always contestable process of decision-making *with and in* a multispecies community.

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